

Code No: RT42044A

R13

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

WIRELESS SENSORS AND NETWORKS

(Common to Electronics and Communications Engineering, Electronics and Instrumentation Engineering and Electronics and Computer Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Mention the unique constraints of WSNs. [4]
- b) What is personal area network? [3]
- c) Mention the few design goals of a MAC protocol. [4]
- d) Compare any two routing protocols. [4]
- e) Mention few issues in designing a transport layer protocol [4]
- f) Explain smart metering application. [3]

PART-B (3x16 = 48 Marks)

2. a) Define Wireless sensor networks and mention its advantages. [8]
- b) Explain about optimization goals and figure of merit. [8]
3. a) Explain about the responsibilities of physical layer and explain the design parameters of physical layer. [8]
- b) Explain about WANETs. [8]
4. a) Explain about Interleaved CSMA protocol. [8]
- b) Discuss contention based protocols with reservation mechanism. [8]
5. a) Discuss the issues in designing a routing protocol for Adhoc wireless networks. [8]
- b) Explain about efficient flooding routing protocols. [8]
6. a) Explain in brief about TCP with explicit link failure notification. [8]
- b) Describe the classification of transport layer solutions. [8]
7. a) Explain the network security requirements in sensor networks. [8]
- b) Discuss about Ultra-wide band radio communication. [8]

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Set No. 2

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Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Mention the advantages of WSNs. [4]
- b) What is hidden node problem? [3]
- c) Mention the few issues in the design of a MAC protocol. [4]
- d) Write the classification of routing protocols. [4]
- e) Write about security protocols. [4]
- f) Discuss about home automation. [3]

PART-B (3x16 = 48 Marks)

2. a) Define Wireless sensor networks and explain the challenges while designing the wireless sensor networks. [8]
- b) Explain sensor node hardware components with diagram. [8]
3. a) Explain various topologies of Personal Area Networks. [8]
- b) Write in detail about Transceiver design considerations. [8]
4. a) Explain about real time MAC protocol. [8]
- b) Explain about MAC protocols that use directional antennas. [8]
5. a) Explain about power-aware routing protocols. [8]
- b) Differentiate between Table-driven and on-demand Routing protocols. [8]
6. a) Explain the design goals of a transport layer protocol for Ad Hoc networks. [8]
- b) Discuss transport layer protocols. [8]
7. a) Explain Berkeley Motes in detail. [8]
- b) Explain Wireless fidelity systems. [8]

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Set No. 3

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Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Write applications of WSNs. [4]
- b) What is mobile adhoc network? [3]
- c) Write short notes on classification of MAC protocols. [4]
- d) Mention few issues in designing routing protocols. [4]
- e) Mention the design goals of a transport layer protocol. [4]
- f) Explain about node-level simulators. [3]

PART-B (3x16 = 48 Marks)

2. a) Define Wireless sensor networks and explain enabling technologies for wireless sensor networks. [8]
- b) Discuss the optimization goals and figure of merit of sensor networks. [8]
3. a) Explain hidden node and exposed node problem. [8]
- b) What is mobile-adhoc networks and list its applications? [8]
4. a) What are the design goals of a MAC protocol for Ad Hoc wireless networks? [8]
- b) What are the different contention based MAC protocols? Explain. [8]
5. a) Discuss the differences between proactive and reactive routing protocols. [8]
- b) Explain about Hierarchical Routing protocols. [8]
6. a) Discuss the issues in designing a transport layer protocol. [8]
- b) Explain the differences between TCP over Ad Hoc wireless networks. [8]
7. a) Explain network security attacks. [8]
- b) Write short notes on state-centric programming. [8]

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Set No. 4

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Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Mention the limitations of WSNs. [4]
- b) What do you mean by gateway concepts? [3]
- c) Compare any two contention based protocols. [4]
- d) Mention the features of Demand Routing protocols. [4]
- e) Write about TCP over Ad Hoc wireless networks. [4]
- f) Discuss the few programming challenges in sensor networks. [3]

PART-B (3x16 = 48 Marks)

2. a) Define Wireless sensor networks and mention its applications. [8]
- b) Explain the energy consumption of sensor nodes. [8]
3. a) Explain about topologies of WANETs. [8]
- b) Discuss the security issues in MANETs. [8]
4. a) Explain the issues in designing a MAC protocol for Ad Hoc wireless networks. [8]
- b) Explain scheduling based MAC protocol. [8]
5. a) Explain the classification of routing protocols. [8]
- b) Explain any two of the routing protocols for wireless sensor networks. [8]
6. a) Explain about transport layer protocol for Ad Hoc wireless networks. [8]
- b) Discuss the classification of transport layer solutions. [8]
7. a) Write note on network security attacks and key management in wireless sensor networks. [8]
- b) Discuss any two applications of wireless sensor networks. [8]