

Code No: **RT42044A****R13****Set No. 1****IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018****WIRELESS SENSORS AND NETWORKS****(Common to Electronics and Communications Engineering, Electronics and Instrumentation Engineering & 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) Point out the challenges for WSNs. [3]
- b) Give the list of the appropriate transceivers for WSNs. [4]
- c) What are the design issues of MAC protocol for Ad hoc wireless networks? [4]
- d) Briefly explain hierarchical routing protocols. [3]
- e) Why does TCP not work well in ad hoc network? [4]
- f) Why secure routing protocols are needed? [4]

PART-B (3x16 = 48 Marks)

2. a) Explain the energy consumption of sensor nodes. [8]
- b) Explain about energy consumption of sensor nodes in detail. [8]
3. a) Discuss about the MANETs. [8]
- b) Design a transceiver in wireless sensor network for any one application. [8]
4. a) Explain in detail low duty cycle MAC protocols. [8]
- b) Generalize the concepts on important classes of MAC protocol. [8]
5. a) Illustrate the basics of table driven Routing Protocols for WSN. [8]
- b) Explain about Power-Aware routing Protocols. [8]
6. a) Explain the classification of transport layer solutions. [8]
- b) With any five major reasons, analyze why TCP is exposed to significant throughput degradation in ad hoc networks. [8]
7. a) Explain how the security provisioning in adhoc network differs from that in infrastructure based network. [8]
- b) Write notes on State centric program. [8]

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1. a) State few characteristic requirements of WSNs. [4]
- b) What is the exposed node problem? [3]
- c) What are the requirements for wireless MAC protocols? [4]
- d) What is the concept of Flooding mechanism? [4]
- e) What are the differential transport layer protocols? [4]
- f) List the network security requirements. [3]

PART-B (3x16 = 48 Marks)

2. a) Explain about single node architecture. [10]
- b) Explain the enabling technologies for WSNs. [6]
3. a) Discuss about WANETs. [8]
- b) Write in detail the four operational states of transceiver. [8]
4. a) Briefly specify IEEE 802.15.4 MAC protocol and explain whether the MAC protocols of 802.11 & Bluetooth be used for WSN. Justify. [8]
- b) Illustrate the basics of contention-based protocol for WSN. [8]
5. a) Illustrate in detail about efficient routing protocols with flooding mechanisms for WSNs. [8]
- b) Explain about Hierarchical routing protocols. [8]
6. a) What are the design issues of Transport layer protocol for Ad hoc wireless networks? [8]
- b) Explain in detail about transport layer protocols with neat diagram. [8]
7. a) List out and explain how some of the internet properties of the wireless Adhoc networks introduce difficulties while implementing security in routing protocols. [8]
- b) Discuss about Node level software Platforms. [8]

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1. a) Generalize the three types of mobility for mobile nodes. [4]
- b) What are the responsibilities of physical layer? [4]
- c) What is inbound neighbor? [3]
- d) Examine the differences between table driven or proactive routing protocols. [4]
- e) List the issues and challenges in security provisioning of transport layer. [4]
- f) How is secure routing done on wireless channels? [3]

PART-B (3x16 = 48 Marks)

2. a) Discuss the advantages and applications of sensor networks. [8]
- b) Explain how the sensor networks are deployed for various applications. [8]
3. a) Explain the physical layer and transceiver design considerations in wireless networks. [8]
- b) Compare MANET and WSN. [8]
4. a) What are the requirements and design constraints for wireless MAC protocols. [8]
- b) Explain about MAC protocols that use directional antennas. [8]
5. a) What are the different classes of Routing Protocols? [8]
- b) Explain about power-aware routing protocols. [8]
6. a) What are the Classification of Transport layer Protocols? [8]
- b) Why does TCP not perform well in adhoc wireless network? Explain. [8]
7. a) What are the design issues and challenges in security provisioning? [8]
- b) Write short notes on Wireless Fidelity systems of WSN. [8]

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1. a) What are the difference between sensor network and MANET? [4]
- b) What is a communication protocol for physical layer? [4]
- c) Differentiate between contention based MAC protocol and schedule based MAC protocol. [4]
- d) What are salient features of on demand protocols routing? [4]
- e) Name the four aspects of security. [3]
- f) What do you mean by active and passive attacks? [3]

PART-B (3x16 = 48 Marks)

2. a) Explain the various challenges and of potential applications of wireless sensor Networks. [10]
- b) Define the types of Sensors. [6]
3. a) Discuss the main responsibilities of physical layer. Explain about the design parameters of physical layer. [8]
- b) Explain about topologies of PANs. [8]
4. a) Design the approaches and performance of S-MAC protocol. [8]
- b) Explain about MAC Protocols that use directional Antennas. [8]
5. a) What are the design issues of Routing protocol for Ad hoc wireless networks? [8]
- b) Illustrate the basics of proactive routing protocol for WSN. [8]
6. a) Explain the differences of TCP over Ad hoc wireless networks. [8]
- b) Explain ad hoc TCP states and event action mapping in detail. [8]
7. a) Explain various network and application layer security attacks in detail. [8]
- b) Write notes on Implementation procedure of node level simulators. [8]