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Question Paper Code : 10544

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2025.

Seventh Semester

Electronics and Communication Engineering

EC 8702 — AD HOC AND WIRELESS SENSOR NETWORKS

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What are the requirements enforced on an ad hoc wireless network, when it is used in a military environment?
2. List any four applications of ad hoc wireless networks.
3. Why is fault tolerance important in a wireless sensor network?
4. Give the difference between the idle state and the sleep state of a transceiver.
5. What is meant by the hidden-terminal problem?
6. What is the basic idea behind the contention-based MAC protocols?
7. List any two challenges in provisioning security in wireless sensor networks.
8. What is jamming?
9. Give any two uses of the TOSSIM simulator.
10. What are the components of Berkeley motes?

PART B — ($5 \times 13 = 65$ marks)

11. (a) Discuss the major issues to be considered in designing a MAC protocol for ad hoc wireless networks.

Or

- (b) Explain how the Destination Sequenced Distance Vector (DSDV) routing protocol works. Discuss its advantages and disadvantages.

12. (a) List the different components of a basic sensor node. Explain the need for each component in detail.

Or

- (b) Discuss about any six QoS attributes related to wireless sensor networks.

13. (a) Explain the working of the Sensor-MAC (S-MAC) protocol.

Or

- (b) Examine the effectiveness of the LEACH protocol.

14. (a) Discuss how key distribution and management can be handled while providing security in wireless sensor networks.

Or

- (b) Explain how does SPINS provide security for sensor networks.

15. (a) Compare the following simulators in terms of the features provided by the simulators to support simulation of sensor network protocols: TinyOS, ContikiOS, Ns2 and Cooja.

Or

- (b) Elucidate on state centric programming with appropriate case studies.

PART C — (1 × 15 = 15 marks)

16. (a) Discuss the issues to be considered while developing routing protocols for ad hoc networks. How are these issues addressed in the Dynamic Source Routing protocols?

Or

- (b) Discuss the issues to be considered while developing MAC protocols for wireless sensor networks. Compare how these issues are handled in contention based protocols and schedule based protocols.