Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 50579

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fifth/Sixth Semester

Electronics and Communication Engineering

CEC 365 – WIRELESS SENSOR NETWORK DESIGN

(Common to : Electronics and Instrumentation Engineering/Electronics and Telecommunication Engineering/Instrumentation and Control Engineering)

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is an ad hoc wireless network?

2. Outline the challenging issues in ad hoc network maintenance.

3. Write the importance of PEGASIS protocol.

4. Why is multihop wireless communication required for WSN?

5. List the factors that are essential for PHY design in WSNs.

6. Differentiate wakeup period and listen period.

7. Why wireless sensor networks need localization protocols?

8. Why is topology control necessary for WSN?

9. Name any two node-level simulators for wireless sensor networks.

10. What is TinyOS? Where is it used?

PART B — (5 × 13 = 65 marks)

11. (a) What is a routing protocol? Outline the issues in designing a routing protocol for ad hoc wireless networks. (13)

Or

(b) Explain top-down design process and bottom up implementation process for wireless sensor network application in detail. (13)

12. (a) (i) Outline the Low Energy Adaptive Clustering Hierarchy (LEACH) protocol for wireless sensor networks. (7)

(ii) Explain the design approaches and performance of S-MAC protocol. (6)

Or

(b) (i) Explain the concept of Gateway with different scenarios in wireless sensor networks. (7)

(ii) Explain the concept of TRAMA protocol. (6)

13. (a) Discuss the distributed assignment of Locally Unique MAC address for WSN. (13)

Or

(b) (i) Bring out the differences between stateless header compression and Context-based header compression. (7)

(ii) Write a detailed note on Proxy Home Agent and Proxy MIPv6. (6)

14. (a) (i) Write a detailed note of ZigBee compact application protocol (CAP). (7)

(ii) Explain about Web service paradigms. (6)

Or

(b) Explain the architecture of SNMP entity and traditional SNMP manager, as specified in RFC2271. (13)

15. (a) (i) Write a detailed note on NesC, Interfaces and its modules with example. (7)

(ii) Outline the features of CONTIKI OS for wireless sensor networks. (6)

Or

(b) (i) Write the steps for Programming in TinyOS using NesC. (7)

(ii) Write a detailed note on Cooja simulator. (6)

PART C — (1 × 15 = 15 marks)

16. (a) Present an ad hoc network design that can be used in a geographic location affected by cyclone. State the functional requirements you are considering.

Or

(b) (i) Design and explain the intelligent transport system using ad hoc network. The proposed system will inform the alternate route during road traffic, and it will provide necessary guideline during accident. (10)

(ii) Discuss suitable routing protocol for your intelligent transport system. (5)