



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Second Semester, M. Tech - Computer Engineering (MCEN)

Semester End Examination; June - 2017

Wireless Sensor Networks

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

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| 1 a. | Differentiate between MANET and wireless sensor networks with respect to application and technical requirements. | 6 |
| | b. Explain the characteristic features of sensor networks. | 4 |
| | c. Discuss the category of routing protocols utilized in wireless sensor networks. | 10 |
| 2 a. | List and explain the different challenges and hurdles in making wireless sensor networks truly ubiquitous. | 10 |
| | b. In detail, explain the applications of wireless sensor networks : | |
| | i) Building Automation (Category 2 WSN Application) | 10 |
| | ii) Military Application (Category 1 WSN Application). | |

UNIT - II

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| 3 a. | Explain the hardware and software components of wireless sensor networks. | 10 |
| | b. Explain the networking protocols supported by WNs. | 10 |
| 4 a. | Explain the basic physical mechanisms affecting the radio propagation. Discuss the Fade factors. | 10 |
| | b. Discuss the following wireless technologies : | |
| | i) Zigbee ii) Bluetooth. | 10 |

UNIT - III

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| 5 a. | Discuss the different performance requirements for MAC protocols of a wireless sensor networks. | 10 |
| | b. Explain the Hidden and Exposed-node problems in CSMA/CA, with a neat diagram. | 10 |
| 6 a. | Explain the sensor protocols for Information via Negotiation (SPIN) protocol basic operations. | 10 |
| | b. Write a note on Directed Diffusion. | 10 |

UNIT - IV

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| 7 a. | Discuss the Transport protocol design issues. | 10 |
| | b. Explain the following transport control protocols : | |
| | i) CODA (Congestion Detection and Avoidance) | 10 |
| | ii) RMST (Reliable Multi Segment Transport). | |

- 8 a. List the basic middle ware functions for WSN and explain middleware architecture with a neat block diagram. 10
- b. Explain the following existing middleware : 10
- i) MILAN
 - ii) Impala.

UNIT - V

- 9 a. Discuss the properties of localization and positioning procedure. Explain its limitations and cost factor. 10
- b. Explain the following with respect to Trilateration and Triangulation : 5
- Lateration versus Angulation.
- c. Explain the concept of approximate point in triangle in single-hop localization. 5
- 10 a. Explain the basic idea to construct independent sets considering an example of simple liner network. 10
- b. Discuss the following : 10
- i) A Native dominating set algorithm based on growing tree
 - ii) Cone-based topology control.

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