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

(An Autonomous Institution affiliated to VTU, Belagavi)

Seventh Semester, B.E. - Computer Science and Engineering

Semester End Examination; Dec - 2017/Jan - 2018

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. | Explain in brief applications of wireless sensor networks. | 6 |
| b. | Discuss the transceivers tasks and characteristics in detail. | 10 |
| c. | Discuss enabling technologies for wireless sensor networks in detail. | 4 |
| 2 a. | Explain the programming paradigms and application programming interfaces in detail. | 10 |
| b. | Discuss the required mechanisms of wireless sensor networks. | 10 |

UNIT - II

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|------|--|----|
| 3 a. | Explain sensor network scenarios in detail. | 10 |
| b. | Describe choice of modulation scheme in wireless sensor network. | 5 |
| c. | Discuss direct sequence spread spectrum in detail. | 5 |
| 4 a. | Explain in detail the design principles of WSN's. | 10 |
| b. | Discuss wave propagation phenomena in detail. | 6 |
| c. | Explain internet to WSN communication in detail. | 4 |

UNIT - III

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|------|--|----|
| 5 a. | Discuss the following : | |
| i) | Traffic-Adaptive medium access protocol | 10 |
| ii) | Sparse topology and energy management. | |
| b. | Explain in detail the error control on wireless link. | 10 |
| 6 a. | Explain in detail about framing. | 10 |
| b. | List and explain the requirements and design constraints for wireless MAC protocols in detail. | 10 |

UNIT - IV

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| 7 a. | Define data aggregation. Explain in detail. | 10 |
| b. | Explain in detail gossiping and agent based unicast forwarding. | 10 |
| 8 a. | Discuss the broadcast increment power algorithm for exploiting the wireless multicast advantage in detail. | 10 |
| b. | Explain geographic routing in detail. | 10 |

UNIT - V

- 9 a. Discuss the positioning in multihop environment in detail. 10
- b. Discuss the following :
 - i) Spanning tree based construction 10
 - ii) Options for topology control.
- 10 a. Explain the three different approaches exist to determine a node's positions. 10
- b. Discuss the properties of localization and positioning procedures in detail. 10

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