Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **18EC3019** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WIRELESS SENSOR NETWORKS** | **Max. Marks :** | **100** |

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| **ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)** | | | | |
| 1. | a. | Outline the functional architecture of wireless sensor networks and explain its layered structure in detail. | CO1 | 12 |
| b. | Compare the features of sensor networks with traditional networks. | CO1 | 4 |
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| 2. | a. | Elaborate the construction of sensor node and interpret the functions of individual components. | CO2 | 10 |
| b. | Examine the functions of tinyOS operating systems. | CO2 | 6 |
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| 3. | a. | Examine the need of time synchronization in wireless sensor networks. Explain in detail   1. Network Time protocol (NTP) 2. Reference Broadcast Synchronization (RBS) | CO3 | 10 |
| b. | Elaborate the features of SMAC protocol. | CO3 | 6 |
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| 4. | a. | Explain the methods to estimate the distance of an unknown object using TDoA and ToA principles. | CO3 | 6 |
|  | b. | Estimate the position of an object using the principle of  i) Trilateration method ii) Multilateration method. | CO3 | 10 |
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| 5. | a. | Describe the design challenges in sensor network database. | CO3 | 08 |
| b. | Summarize the different types of data aggregation methods in wireless sensor networks. | CO3 | 08 |
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| 6. | a. | Discuss the importance of transport layer protocols for wireless sensor networks. Explain any two in detail. | CO5 | 10 |
| b. | Write the significance of Zigbee protocol. | CO5 | 6 |
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| 7. | a. | Analyze the importance of pattern matching in wireless sensor networks with a help of Nearest Neighbor Signal Space (NNSS) algorithm. | CO3 | 10 |
| b. | Propose any two applications of wireless sensor networks in detail. | CO5 | 6 |
| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Elaborate the importance of power management in wireless sensor networks. | CO3 | 10 |
| b. | Examine the design issues in energy efficient MAC protocol and discuss about IEEE 802.11 protocol. | CO3 | 10 |