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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **14EC3048** | **Duration :** | **3hrs** |
| **Sub. Name :** | **EMBEDDED SENSOR NETWORKS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Distinguish traditional wireless networks and wireless sensor networks. | CO1 | 10 |
| b. | Individual components of sensor node play a vital role in achieving energy efficiency. Justify. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Discuss few applications of wireless sensor networks. | CO1 | 10 |
| b. | Sensor networks follow functional architecture. Why? | CO1 | 10 |
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| 3. | a. | Traditional MAC protocols are not suitable for sensor networks. Evaluate the reasons. Analyze the rationale for power wastage in MAC and propose few MAC schemes for sensor networks. | CO1 | 10 |
| b. | Consider 3 nodes N1, N2, N3 in a virtual cluster. If N3 goes to sleep and N2 transmits data to N1, illustrate this co-ordinate sleeping scenario of S-MAC with neat diagram. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Why traditional MAC protocols are not suitable for sensor networks. What are the reasons for power wastage in MAC? | CO1 | 10 |
| b. | Develop a sensor network model for forest fire detection in Siruvani hills. Use appropriate sensor nodes. | CO1 | 10 |
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| 5. | a. | Compare IEEE 802.15.4 with GSM, Wifi and Bluetooth technologies. | CO2 | 10 |
| b. | If distance estimation is not possible, choose an alternate method for location discovery. | CO3 | 10 |
| (OR) | | | | |
| 6. | a. | GPS is not suitable for many applications of wireless sensor network. Examine the reasons. Recommend various methods to solve this positioning problem. | CO3 | 10 |
| b. | Suppose we have an embedded sensor network to track a Zebra in the forest. Illustrate the activities involved in tracking when the Zebra moves in a sensor field? | CO3 | 10 |
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| 7. | a. | What is idle power management? How idle power management is achieved in ARM-SA 1100 processor and in Blue-tooth radio? | CO3 | 10 |
| b. | Formulate a State transitioning policy to achieve energy efficiency. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | Evaluate the performance of IEEE 802.11 MAC schemes and its suitability for embedded sensor networks. | CO3 | 10 |
| b. | Summarize the problems with high data rate sensors. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. |  | Evaluate the security architecture of cell based wireless sensor networks. | CO3 | 20 |