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



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

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|  |  |  |  |
| **Code :** | **17NT3002** | **Duration :** | **3hrs** |
| **Sub. Name :** | **NANOELECTRONICS** | **Max. Marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Discribt in detail the various short channel effects of nanoscale transistors in detail with band diagram. | CO1 | 20 |
| **(OR)** | | | | |
| 2. |  | Discuss in detail the Silicon on Insulator (SOI) technology with neat diagram. | CO2 | 20 |
|  |  |  |  |  |
| 3. |  | Elaborate in detail the single electron transistor with coulomb blockade effect. | CO5 | 20 |
| **(OR)** | | | | |
| 4. |  | Design the high electron mobility transistor with the formation of two - dimensional electron gas. | CO5 | 20 |
|  |  |  |  |  |
| 5. | a. | Explain the working principle of spin transistor. | CO3 | 14 |
| b. | Determine the necessecity of software tools used in nanoelectronics. | CO6 | 6 |
| **(OR)** | | | | |
| 6. |  | Evaluate the function of tunnel diode and discuss in detail the resonant tunneling diode with its current voltage characteristics. | CO5 | 20 |
|  |  |  |  |  |
| 7. |  | Discuss in detail the function of carbon nanotube sensor with neat diagram. | CO4 | 20 |
| **(OR)** | | | | |
| 8. |  | Elaborate in detail the working of gas sensitive field effect transistor with neat diagram. | CO3 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Elaborate in detail the quantum dot cellular automata with various device configuration. | CO6 | 20 |