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



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

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| **Code :** | **17EI3012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **REAL TIME AND EMBEDDED CONTROL AUTOMATION** | **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. | Draw and explain the typical Embedded system architecture. | CO1 | 10 |
| b. | Compare the various types of embedded systems and mention their significance. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Illustrate an application-specific Embedded system with suitable example. | CO1 | 10 |
| b. | Enumerate the steps involved in designing an Embedded System. | CO2 | 10 |
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| 3. | a. | Give the advantages and disadvantages of highlevel language based software development. | CO2 | 10 |
| b. | Define state, process and thread. Write a detailed account of state table with a relevant example. | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Mention the role of watchdog timer in embedded systems. | CO2 | 10 |
| b. | Illustrate with necessary diagram, the steps to interface a temperature sensor with a microcontroller. | CO3 | 10 |
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| 5. | a. | What is the difference between general purpose kernel and real time kernel? Give example. | CO3 | 10 |
| b. | Demonstrate how PWM signal is used to control the speed of a motor. | CO3 | 10 |
| **(OR)** | | | | |
| 6. | a. | What is task scheduling? Give a detailed account of Round Robin scheduling and pre-emptive scheduling algorithm. | CO3 | 10 |
| b. | Differentiate between simulation and emulation in an embedded system. | CO3 | 10 |
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| 7. | a. | Explain about Timer and counting devices in Embedded Hardware. | CO4 | 10 |
| b. | What is ISR? Explain the step by step process of Interrupt handling in an RTOS environment. | CO5 | 10 |
| **(OR)** | | | | |
| 8. | a. | Elaborate the hardware and software approach for PWM signal generation. | CO5 | 10 |
| b. | Explain the role of integrated development environment for embedded software development. | CO5 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Discuss about the role of embedded systems for elevator control. | CO6 | 10 |
| b. | Give a brief account on remote controlled system using embedded systems with a relevant case study. | CO6 | 10 |