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



**End Semester Examination – Nov/Dec - 2017**

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| **Code :** | **15EI2037** | **Duration :** | **3hrs** |
| **Sub. Name :** | **INTELLIGENT INSTRUMENTATION SYSTEMS** | **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. | What are the types of embedded systems and various components involved in embedded system application development? | CO2 | 14 |
| b. | What are the typical characteristics of an embedded system? | CO2 | 6 |
| (OR) | | | | |
| 2. | a. | Explain in detail about the software development tools used in real time system. | CO2 | 10 |
| b. | Elaborate on various design process and metrics that is to be optimized in an embedded system design. | CO2 | 10 |
|  |  |  |  |  |
| 3. | a. | With neat Sketch, Illustrate how the hardware and software based approaches are used to generate Pulse Width Modulation signal to control the speed of DC motor using micro controller. | CO1 | 16 |
| b. | Write an embedded C program for interfacing switch with microcontroller. | CO1 | 4 |
| (OR) | | | | |
| 4. | a. | List the procedure for selection of ADC and design to be used in an embedded system | CO1 | 5 |
|  | b. | Explain in detail about various methods by which the stepper motor is interfaced to a microcontroller. | CO1 | 15 |
|  |  |  |  |  |
| 5. | a. | What is host and target machine in an embedded system? | CO3 | 5 |
|  | b. | Draw the hardware connection between microcontroller and Seven Segment Display and write the embedded C code for activating it. | CO1 | 15 |
| (OR) | | | | |
| 6. |  | Design an embedded system to measure the heart rate of the patient. Select any known embedded processor of your interest. Support your hardware design with a block diagram and the software development with a flow diagram. | CO2 | 20 |
|  |  |  |  |  |
| 7. | a. | Define process and task. Explain about different task states with an example. | CO2 | 12 |
|  | b. | Describe the various functions of RTOS. | CO2 | 8 |
| (OR) | | | | |
| 8. | a. | What is Kernel? Discuss how Priority Inversion problem is handled by Real time kernel in RTOS. | CO3 | 15 |
|  | b. | Write short notes on memory management functions. | CO3 | 5 |
|  | | **Compulsory**: |  |  |
| 9. |  | With neat sketch, illustrate the different methods of handling interrupt services in RTOS environment. | CO3 | 20 |

ALL THE BEST