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

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

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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. | Explain in detail about the basic architecture of an embedded system. | CO2 | 10 |
| b. | Conversion of assembly code into machine implementable code is an essential step for designing an embedded software system. Justify your answer. | CO2 | 10 |
| (OR) | | | | |
| 2. | a. | List any five typical applications of embedded systems and highlight its characteristics. | CO1 | 6 |
| b. | Describe the various design process and metrics that is to be optimized in an embedded system design. | CO2 | 14 |
|  |  |  |  |  |
| 3. | a. | Comment briefly on the hardware and software approaches for interfacing I/O devices with microcontroller. | CO2 | 14 |
| b. | Narrate the working principle of successive approximation type ADC. | CO2 | 6 |
| (OR) | | | | |
| 4. |  | Prioritize the steps involved for generating pulse width modulation signals in software and hardware. | CO2 | 20 |
|  |  |  |  |  |
| 5. |  | Design an embedded system to measure the pulse 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. | CO3 | 20 |
| (OR) | | | | |
| 6. | a. | Sketch the block diagram of data acquisition system and highlight the features of it. | CO1 | 14 |
| b. | Write short notes on simulation and emulation of an embedded systems. | CO2 | 6 |
|  |  |  |  |  |
| 7. | a. | Explain in detail about different task states with an example. | CO2 | 10 |
| b. | Identify the importance of memory management functions in RTOS. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | Discuss the followings   1. Timer Functions 2. Event Functions | CO3 | 10 |
| b. | Prioritize the different services provided by real time operating system. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. |  | Analyze the response of interrupt routines in RTOS environment and handling of interrupt source calls with necessary diagram. | CO3 | 20 |