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



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

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| **Code :** | **17EI2028** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SCADA SYSTEMS DESIGN** | **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 the block diagram of a SCADA system and explain each block in detail. | CO1 | 10 |
| b. | Elaborate on the hardware and software used for SCADA systems. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Appreciate the importance of data acquisition system and explain the operation with a neat block diagram. | CO3 | 10 |
| b. | Elaborate on the basic structure of SCADA system. | CO3 | 10 |
|  |  |  |  |  |
| 3. | a. | Explain the different communication topologies used in SCADA system. | CO5 | 8 |
| b. | Sketch the architectural block diagram of Master terminal unit and explain each block. | CO4 | 12 |
| **(OR)** | | | | |
| 4. | a. | Mention the need of Intelligent electronics device and explain its various functionality. | CO4 | 10 |
| b. | With the neat sketch, elaborate the operation of SCADA server. | CO4 | 10 |
|  |  |  |  |  |
| 5. |  | Draw the architecture of modern SCADA systems and explain the same with the components involved. | CO2 | 20 |
| **(OR)** | | | | |
| 6. | a. | Draw the sequence of asynchronous operation of the RS-232 interface and explain the same. | CO5 | 12 |
| b. | Elaborate the operation of RS-485 protocol. | CO5 | 8 |
|  |  |  |  |  |
| 7. | a. | Explain the Ethernet with required operational methodologies and communication medium used for the same. | CO5 | 15 |
| b. | Discuss the simplest error detection technique used in wired communication. | CO5 | 5 |
| **(OR)** | | | | |
| 8. | a. | List the types of cables used in SCADA systems and discuss about the fastest one in detail. | CO5 | 8 |
| b. | Analyze the use of wireless communication in SCADA systems and identify the efficient one with its operation features. | CO2 | 12 |
|  | | **Compulsory**: |  |  |
| 9. |  | Give a case study on usage of SCADA in transmission and distribution systems | CO2 | 20 |