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



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

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| **Code :** | **14EI2012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **LOGIC AND DISTRIBUTED CONTROL 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 the operation of supervisory control and data acquisition system with neat diagram. | CO1 | 12 |
| b. | Draw the block diagram of DDC and explain the significance of each block in it. | CO1 | 8 |
| **(OR)** | | | | |
| 2. | a. | Explain the implementation of digital controller modes in DDC using suitable flowcharts. | CO1 | 10 |
| b. | Analyse the functions of each element present in the data acquisition system. | CO1 | 10 |
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| 3. | a. | With neat diagram elaborate the architecture of Programming Logic Controller. | CO2 | 12 |
|  | b. | Two conveyors feed a main conveyor. The count from each feeder conveyor is fed into a input register in PLC. Construct a PLC program to obtain the total number of parts in the main conveyor. If total count of main conveyor reaches 15, stop the convey. | CO2 | 8 |
| **(OR)** | | | | |
| 4. | a. | With suitable examples analyze the Timer concepts in PLC. | CO2 | 12 |
|  | b. | Draw the Ladder Program for Automating the Car Park Area and display a Light for “House Full” if the Parking has cars of 50. Assume you could count both incoming and outgoing Cars. | CO2 | 8 |
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| 5. | a. | List out the sequences of Washing Machine Automation. To implement the control logic using PLC, develop a ladder logic programming. Clear description of sensors and output devices is a must. | CO2 | 12 |
|  | b. | Discuss the various data move functions available in PLC. | CO2 | 8 |
| **(OR)** | | | | |
| 6. | a. | Discuss the functionality of Master Control Relay and SKIP functions in PLC ladder programming. | CO2 | 12 |
|  | b. | Explain in detail about the PLC-PID function with necessary example. | CO2 | 8 |
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| 7. | a. | Explain with a neat sketch the communication structure of a Distributed Control System and discuss the functionality and responsibilities of the same. | CO3 | 20 |
| **(OR)** | | | | |
| 8. | a. | Draw and illustrate on the various architecture of the local control unit. | CO3 | 15 |
|  | b. | Discuss the various programming languages used in LCU. | CO3 | 5 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Give a case study of implementation of DCS in thermal power plants. | CO3 | 20 |