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

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

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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. | Discuss the basic architecture of PLC with neat block diagram. | CO1 | 12 |
| b. | Draw the ladder diagram for interlocking of fan and lamp. | CO1 | 8 |
| (OR) | | | | |
| 2. | a. | Describe the concept of Direct Digital Control with neat diagram. | CO1 | 10 |
| b. | Write short note on the functions and operation of the following programming language   1. Function block diagram 2. Structure text 3. Ladder diagram | CO2 | 10 |
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| 3. | a. | Write short notes on the operation of following data manipulation instruction   1. Data transfer 2. Data comparison | CO2 | 10 |
| b. | Discuss in detail about the working principle and the operation of discrete input modules used in PLC with suitable diagrams. | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | Distinguish between SCADA and DCS, Explain the hardware architecture of SCADA. | CO2 | 14 |
| b. | Convert the following relay schematic into ladder diagram. | CO2 | 6 |
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| 5. | a. | Discuss about the different types of math instructions in PLC. Explain addition and multiplication instructions with suitable example. | CO2 | 10 |
| b. | Design a ladder diagram for the following operation.  http://4.bp.blogspot.com/-x-4BJ2lVKYQ/UpwLpZVKmYI/AAAAAAAAAWY/V1m_nQ3ZgVo/s640/Ladder+Program+Example+1.JPG | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Draw the Ladder diagram for Converting ºC to ºF. | CO2 | 10 |
| b. | Describe in detail about the On-Delay Timer Instruction with a suitable example. | CO2 | 10 |
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| 7. | a. | Discuss and Compare the architectural parameters for the various configurations in Local Control Unit. | CO3 | 10 |
| b. | Describe about security interfacing issues in DCS. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | Discuss about the functions of low level operator interface. | CO3 | 10 |
| b. | Describe about the Engineering Interfaces in Distributed Control System. | CO3 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Write briefly about communication system standards in DCS | CO3 | 5 |
| b. | Discuss the basic functions of DCS in water treatment plant with neat diagram. | CO3 | 15 |