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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EI2044** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PLC and Automation** | **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 Architecture of PLC with a neat diagram. | CO1 | **14** |
| b. | Draw the ladder diagram to activate the motor by pressing the start push button and deactivate the motor by stop button. | CO1 | **6** |
| **(OR)** | | | | |
| 2. | a. | What is the need of communication in PLC? Explain any one standard adopted in the communication protocol. | CO2 | **10** |
| b. | Draw the PLC Ladder diagram for the logic circuit given below.  Image result for sample logic diagram | CO1 | **10** |
| 3. | a. | Draw the Ladder Program for automating the Car Park Area and display a “blue light” if the parking has cars of less than 50 and “red light” if the parking has cars of 50 . Assume you could count both incoming and outgoing cars. | CO3 | **10** |
|  | b. | Draw a relay ladder and ladder logic program to start 3 motors using timer for the following conditions.  a. Start Motor 1 (oil pump motor) using short push button.  b. Start Motor 2 after 10 seconds of Motor 1 starts.  c. Start Motor 3 after 15 seconds of Motor 2 starts. | CO3 | **10** |
| **(OR)** | | | | |
| 4. |  | Vividly explain in detail about the Timer functions and the Counter functions in PLC with example ladder logic. | CO3 | **20** |
| 5. |  | List out the Arithmetic functions and Number Comparison functions in PLC. Explain each instruction in detail with example ladder logic. | CO1 | **20** |
| **(OR)** | | | | |
| 6. | a. | Explain in detail about the Jump functions in PLC with example ladder logic. | CO1 | **10** |
|  | b. | Develop the ladder logic for a Dishwasher function using a PLC. List out the sequences and I/O devices. | CO3 | **10** |
| 7. | a. | Name the LCU programming language alternatives. Explain any one in detail. | CO2 | **16** |
|  | b. | Mention the various types of Redundancy. | CO2 | **4** |
| **(OR)** | | | | |
| 8. | a. | Draw the architecture of DCS and explain the function of each block in detail. | CO2 | **16** |
|  | b. | What are the functions of engineering interface in DCS? | CO2 | **4** |
|  | | **Compulsory:** |  |  |
| 9. |  | With the neat diagram, explain the Computer Numerical Control system using PLC. | CO2 | **20** |

ALL THE BEST

**Course Outcome:**

* Identify, formulate, and solve problems related to PLC.
* Design a system, component, or process to meet desired needs of the industrial requirement.
* Implement a complete SCADA project relating to an industrial process or operation.