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 – April/May – 2017**

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| **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. | Draw the PLC Ladder diagram for the logic circuit given below.  Image result for sample logic diagram | CO1 | 10 |
| b. | Discuss in detail about the communication options used for Programming Logic Controllers. | CO2 | 10 |
| (OR) | | | | |
| 2. | a. | Explain the Architecture of PLC with a neat diagram. | CO1 | 15 |
| b. | What are the advantages of Programming Logic Controllers? | CO1 | 5 |
| 3. |  | Vividly explain in detail about the Timer functions and the Counter functions in PLC with example ladder logic. | CO3 | 20 |
| (OR) | | | | |
| 4. | 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.  i. Start Motor 1 (oil pump motor) using short push button.  ii. Start Motor 2 after 10 seconds of Motor 1 starts.  iii. Start Motor 3 after 15 seconds of Motor 2 starts. | CO3 | 10 |
| 5. |  | Write down all the mathematical instructions and explain its operation with example of each. | CO1 | 20 |
| (OR) | | | | |
| 6. | a. | Explain in detail about the Jump functions in PLC with example ladder logic. | CO1 | 14 |
|  | b. | List out the sequences of Washing Machine Automation. | CO3 | 6 |
| 7. | a. | Explain the operation of supervisory control and data acquisition system with neat diagram. | CO3 | 16 |
| b. | List out the difference between SCADA and PLC. | CO3 | 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 industrial robotics system using PLC. | CO2 | 20 |