**Karunya University**
**(Karunya Institute of Technology and Sciences)**
(Declared as Deemed to be University under Sec.3 of the UGC Act, 1965)

**End Semester Examinations - 2015-16 Even Semester - May 2016**

---

**14EI2012 Logic and Distributed Control Systems**

**Set A** **Time : 3 hrs**
**Total Marks: 100**

---

1. a. Write the governing equations and explain the two forms of digital PID control algorithms. (15)

   b. Explain briefly about Data Acquisition System (DAS). (5)

**OR**

2. a. Draw the block diagram of SCADA system and explain each block. Also explain the functions performed by SCADA systems. (12)

   b. Explain in detail about Data Loggers with neat sketch. (8)

3. a. Describe the architecture of PLC with a neat diagram. (12)

   b. Sketch and explain the timing diagram of Timers. (8)

**OR**

4. a. Write short notes on PLC counters with a suitable example. (6)

   b. Draw the ladder logic for the following process. A wood saw, W, a fan, F, and a lubrication pump, P all go on when a start button is pushed. A stop button stops the saw only. The fan is to run an additional 5 seconds to blow the chips away. The lube pump is to run for 8 seconds after shutdown of W. Additionally, if the saw has run more than one minute, the fan should stay on indefinitely. The fan may then be turned off by pushing a separate fan reset button. If the saw has run less than one minute, the pump should go off when the saw is turned off. The 8 second time delay off, does not take place for a running time of less than one minute. (14)

5. Explain the following topics with examples:

   a. PID Function in PLC. (7)

   b. Skip and MCR Function. (7)

   c. MOVE Function in PLC (6)

**OR**

6. 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. (15)

   b. How shift registers are used in PLC (5)

7. a. Explain with a neat sketch the structure of a Distributed Control System. Discuss the functioning of its various parts. (10)

   b. What are the basic architectures available in LCU? Explain. (10)

**OR**

8. a. Explain the various approaches in designing a redundant LCU architecture. (14)

   b. Write notes on Launguages used in LCU (6)

9. Explain the requirments of the communication facilities in DCS.

---

**Wishing you All the Best**

---