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Question Paper Code : 21539

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Seventh Semester

Electronics and Instrumentation Engineering

EI 2402/EI 72/10133 IC 702 — LOGIC AND DISTRIBUTED CONTROL SYSTEM

(Common to Instrumentation and Control Engineering)

(Regulations 2008/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define PLC.

2. What are all the programming devices available to program the PLC?

3. Give an example for program control instruction.

4. Define the instruction used for ON Delay timer operation in PLC.

5. What is supervisory control?

6. Mention the components used in SCADA system.

7. Define DCS with an example.

8. What do you mean by local control unit?

9. Mention some of the protocols used in DCS system.

10. Mention the display hierarchy used in the DCS system.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Differentiate PLC and conventional relay based logic system. (6)

(ii) Explain the functioning of analog and digital modules of PLC. (10)

Or

(b) (i) Write down the steps to be considered for designing a 16 analog input and 5 digital input, 5 analog output and 2 digital output PLC . (6)

(ii) What is the purpose of input status table and output status table in PLC and write any PLC program using counter instruction. (10)

12. (a) Describe any typical control application using math instructions of PLC. (16)

Or

(b) (i) Mention the inputs and Outputs used in a bottling application and write a program using ladder diagrams. (use Minimum 6 I/O, 2 Timers, 1 Counter) . (10)

(ii) Can a PC be used as PLC? How? (6)

13. (a) (i) Describe about direct digital control systems with examples. (10)

(ii) Explain the protocols used in the computer controlled systems and mention its standards. (6)

Or

(b) Explain the components and architecture of SCADA with neat diagram. (16)

14. (a) Explain the importance of DCS and mention the software used in DCS. (16)

Or

(b) (i) What are all the process interfacing issues related to DCS. (8)

(ii) Mention the important communication facilities used in a process industry. (8)

15. (a) (i) Compare the features present in low level and high level operator interfaces with examples. (6)

(ii) Explain the operator displays used in any of the process industry. (10)

Or

(b) (i) Explain any one architecture of high level engineering interface . (8)

(ii) Explain the uses and need for interfacing general purpose PC with DCS. (8)