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Question Paper Code : 21432

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Seventh Semester

Electronics and Instrumentation Engineering

EI 2402 / EI 72 / 10133 EI 702 – LOGIC AND DISTRIBUTED CONTROL SYSTEM

(Common to Instrumentation and Control Engineering)

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the advantages of PLC over relay logic.
2. Name the common output devices used in ladder rung of PLC.
3. Mention any four real time applications of PLC.
4. State the various math instructions in PLC.
5. Define SCADA.
6. List the tasks performed by microprocessor in direct digital control.
7. Define distributed control systems?
8. Name few popular communication buses used in DCS.
9. Mention the features provided in operator interfaces.
10. State the main functions of computers in DCS.

PART B — (5 × 16 = 80 marks)

11. (a) (i) With neat block diagram, discuss the various components of PLC. (8)

(ii) Sketch and Explain the functions performed by analog I/O module. (8)

Or

(b) (i) How timers and counters are programmed in PLC? Illustrate with an example. (6)

(ii) Develop ladder diagram for controlling the level of liquid in a tank between upper and lower limits. (10)

12. (a) Discuss the automatic bottle filling system with hardware and ladder diagram. (16)

Or

(b) (i) Develop a ladder diagram for the case given. A switch will increment the counter on when engaged. This counter can be reset by a second switch. The value in the counter should be multiplied by five and then displayed as a binary output. (8)

(ii) Discuss how PC can be used as PLC. (8)

13. (a) With neat block diagrams, explain the basic building blocks of computer controlled system. (16)

Or

(b) (i) Explain any one supervisory control scheme. (8)

(ii) Compare DCS and DDC. (8)

14. (a) Explain the architecture of distributed control system and its main sub-system. Compare it with SCADA system. (16)

Or

(b) Describe the local control unit and communication facilities used in any process industry. (16)

15. (a) (i) Discuss the features of high level operator interfaces in detail. (8)

(ii) Explain the hierarchy of operator display used in DCS. (8)

Or

(b) List the various engineering interfaces used in DCS. With neat diagram, explain the low and high level engineering interfaces. Differentiate between them. (16)
