

G 1306

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2016**

**Seventh Semester**

Branch : Applied Electronics and Instrumentation Engineering/Electronics and Instrumentation Engineering

AI 010 702 / EI 010 702—COMPUTERISED PROCESS CONTROL (AI, EI)

(New Scheme—2010 Admission onwards)

[Improvement/Supplementary]

Time : Three Hours

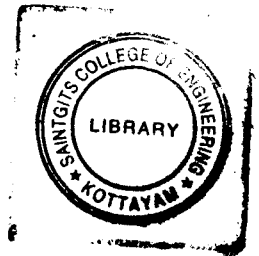
Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. Define SCADA. What are its features ?
2. What are fixed PLC and modular PLC ?
3. What are deadbeat characteristics ?
4. Explain the analog multiplexer used in data acquisition system.
5. Explain the significance and need of grounding.



(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. Explain the communication among components in SCADA.
7. How is a timer used in a PLC ? Explain the different types of timers used in a PLC.
8. Write an explanatory note on Kalman filter.
9. Explain the control console equipment used in DCS.
10. What is static electricity ? How the hazards caused by it are taken care of ?

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each full question carries 12 marks.*

11. Explain the block diagram of SCADA. What are its advantages and applications ?

Or

Turn over

12. Draw and explain the block diagram of a computer control system which uses a multichannel DAS. Explain each component in it.
13. Develop a ladder diagram for controlling the process of maintaining the level at the setpoint in a tank while filling the bottles by opening the outlet valve.

*Or*

14. With neat diagrams, explain the microprocessor based PLC architecture. Discuss the features of PLC programming languages.
15. Give an account on how PID control algorithm can be mechanized using microprocessor.

*Or*

16. Explain Dahlin's algorithm for a first order system with the help of a suitable example.
17. Explain the various DAC and ADC used giving their important features.

*Or*

18. With a practical example, explain how the integration of man-machine integration is carried out with PLC.
19. What are the steps taken in process safety management? How hazard analysis is done?

*Or*

20. Give a clear case study of process hazard analysis of a process control industry.

(5 × 12 = 60 marks)

