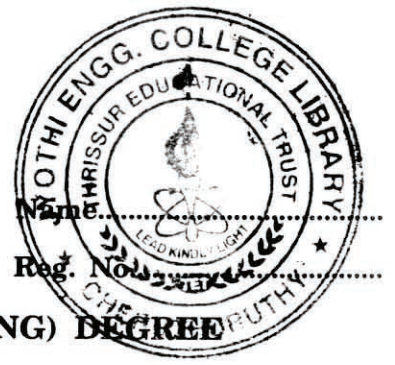


C 44442

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**SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2013**

EE 09 L23—PROCESS CONTROL AND INSTRUMENTATION

(2009 Scheme – Supplementary)

Time : Three Hours

Maximum : 70 Marks

Part A

Answer all questions.

1. Mention the role of steady state error in control system evaluation.
2. When do you select a dc motor as an actuator ?
3. What are the advantages of RTD as a thermal sensor ?
4. Mention the applications of 2-position controllers.
5. What is meant by quarter amplitude criterion ?

(5 × 2 = 10 marks)

Part B

Answer any four out of six questions.

6. Explain the significance of DAC and ADC in process control system.
7. How does an automatic control system improve the controlled system performance ?
8. With a neat diagram explain the working of magnetic flow meter ?
9. Compare the performance of PI and PD controllers ?
10. Explain the effect of process lag in control system, with a suitable example.
11. Determine the gain margin for the unity feedback system with $GH(s) = 1/[s(s + 1)]$.

(4 × 5 = 20 marks)

Part C

Answer four full questions.

12. Explain the different components of a typical process control system with the help of block diagram.

Or

13. How do you evaluate the transient response of a system ?
14. With a neat diagram explain the function of hydraulic servo as a control unit.

Or

15. How do you develop a current to pressure conversion mechanism ?

Turn over

16. Substantiate that a PID controller is superior to other controllers ?

Or

17. Explain in detail, the features of a pneumatic PI controller.

18. With suitable examples, mention the salient features of : (a) cascaded control system ; and
(b) multivariable control systems.

Or

19. Explain any one of the Ziegler-Nichols tuning method for PD controller.

(4 × 10 = 40 marks)