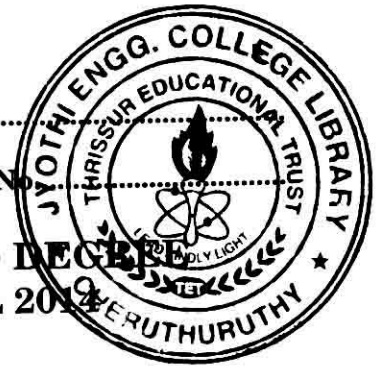


C 62968

(Pages : 2)

Name.....

Reg. No.....



**SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE
[SUPPLEMENTARY] EXAMINATION, APRIL 2019**

(2009 Scheme)

EE 09 705 L23 – PROCESS CONTROL AND INSTRUMENTATION

Time : Three Hours

Maximum : 70 Marks

Part A

Answer **all** questions.

1. What is meant by servo mechanism?
2. Mention the advantages of induction motor as an actuator.
3. What are the different types of control valves?
4. How does control lag affect the performance of process control system?
5. What do you mean by optimum control?

(5 × 2 = 10 marks)

Part B

Answer any **four** out of six questions.

6. With suitable sketches, explain the role of damping on the transient response.
7. Write a short note on the pneumatic amplifier.
8. Explain the salient features of thermocouple.
9. What is meant by steady state cycling?
10. Briefly explain the significance of error detector in a feedback system. Also, develop an error detector using OP-AMP.
11. Explain the concept of adaptive control system.

(4 × 5 = 20 marks)

Part C

Answer **four** full questions.

12. Differentiate between the automatic control and manual control with suitable examples.
- Or
13. With a schematic, explain the functioning of digital control system.

Turn over

14. Explain the function of nozzle-flapper system as a control unit.

Or

15. When do you prefer a stepper motor as an actuator?

16. How does the differential gap affect the performance of an ON-OFF controller?

Or

17. How do you implement an OP-AMP based PI-controller?

18. Assess the stability of the unity feedback system with $GH(s) = 10/[(s + 1)(s + 10)]$ using Bode plot.

Or

19. Explain Process Reaction Method for PI-controller tuning.

(4 × 10 = 40 marks)