GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

CONTROL SYSTEMS LAB

Course Code: GR15A2045   L:0 T:0 P:2 C:2
II Year II Semester

Course Objectives
- Will have a strong knowledge on MATLAB and Millennium software.
- They get the basic knowledge on practical control system and PLC applications.
- They get the knowledge on applications of machines & electronic devices with control systems.

Course Outcomes
- Will have a strong knowledge of MATLAB software
- Will be able to do various engineering projects.
- Ability to formulate transfer function for given control system problems.
- Ability to find time response of given control system model.
- Plot Root Locus and Bode plots for given control system model
- Ability to design Lead, Lag, Lead-Lag systems in control systems
- Ability to design PID controllers for given control system model

Contents
1. Transfer function from zeros and poles
2. Zeros and poles from transfer function
3. Characteristics of synchros
4. Time response of series rlc circuits
5. State model from transfer function
6. State model from zeros and poles
7. Zeros and poles from state model
8. Step response of a transfer function
9. Impulse response of a transfer function
10. Ramp response of a transfer function
11. Step response of a state model
12. Impulse response of a state model
13. Ramp response of a state model
14. Transfer function of a dc generator

15. Transfer function of a dc motor
16. Time response of second order system
17. Root locus from a transfer function
18. Bode plot from a transfer function
19. PID controller
20. Lag compensator
21. Lead compensator
22. Lag- lead compensator
23. Determination of transfer function of dc motor
24. Hysteresis control of speed and current of dc motor, output to keep armature current Within limits using lab view
25. Bang bang speed control of dc motor
26. Speed control of dc motor using PID controller with a tcho feedback
27. Experimental determination of frequency response of speed control of a dc motor and to Obtain the transfer function of the system using lab view
28. Nyquist plot from transfer function
29. Ac variable speed drive for 3 phase induction motors from 0.25kw to 7.5kw , 0.33hp To 10hp.
30. Millenium PLC applications