Name of the laboratory: Control Systems

Objectives of the lab:

- To understand the different ways of system representations such as Transfer function representation and state space representations and to assess the system dynamic response
- To assess the system performance using time domain analysis and methods for improving it
- To assess the system performance using frequency domain analysis and techniques for improving the performance
- To design various controllers and compensators to improve system performance

List of experiments:

1. Time response of Second order system
2. Characteristics of Synchros
3. Programmable logic controller – Study and verification of truth tables of logic gates, simple Boolean expressions, and application of speed control of motor.
4. Effect of feedback on DC servo motor
5. Transfer function of DC motor
6. Transfer function of DC generator
7. Temperature controller using PID
8. Characteristics of AC servo motor
9. Effect of P, PD, PI, PID Controller on a second order systems
10. Lag and lead compensation – Magnitude and phase plot
11. (a) Simulation of P, PI, PID Controller.
12. (b) Linear system analysis (Time domain analysis, Error analysis) using suitable software
13. Stability analysis (Bode, Root Locus, Nyquist) of Linear Time Invariant system using suitable software
14. State space model for classical transfer function using suitable software -Verification.
15. Design of Lead-Lag compensator for the given system and with specification using suitable software

LIST OF EQUIPMENT

S.NO	DESCRIPTION
1	Characteristics of synchronous transmitter and receiver
2	Programmable logic controller
3	Time response of second order system
4	Effect of feedback on DC servo motor
5	Transfer function of DC motor
6	Temperature controller using PID
7	Characteristics of AC servo motor
8	Characteristics of magnetic Amplifier
9	Lead and lag compensation
10	Transfer function of DC generator
11	PID controller kit analog type
12	Regulated Power supply
13	Multi meters
14	CRO's


DIGITAL
TACHOMETER
D. C. POSITION CONTROL SYSTEM