III-I SEMESTER

CONTROL SYSTEMS LAB

Learning Objectives:

To impart hands on experience to understand the performance of basic control system components such as magnetic amplifiers, D.C. servo motors, A.C. Servo motors, stepper motor and potentiometer.

To understand time and frequency responses of control system with and without controllers and compensators.

Any 10 of the following experiments are to be conducted:

1. Time response of Second order system
2. Characteristics of Synchros
3. Programmable logic controller – characteristics of stepper motor 4. Effect of feedback on DC servo motor
5. Effect of P, PD, PI, PID Controller on a second order systems
6. Lag and lead compensation – Magnitude and phase plot
7. DC position control system
8. Transfer function of DC motor
9. Temperature controller using PID
10. Characteristics of magnetic amplifiers
11. Characteristics of AC servo motor
12. Characteristics of DC servo motor
13. Potentiometer as an error detector

Learning Outcomes

Able to analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchronous motors.

Able to design P,PI,PD and PID controllers

Able to design lag, lead and lag–lead compensators

Able to control the temperature using PID controller

Able to determine the transfer function of D.C.motor

Able to control the position of D.C servo motor performance