3/4 B.Tech. SECOND SEMESTER

EE6L2 CONTROL SYSTEMS LAB Credits: 4

Practical: 3 periods/week **Internal assessment: 25 marks**

Tutorial: 0 period /week **Semester end examination: 50 marks**

Any Eight of the Following Experiments are to be Conducted:

To make the student

To know the significance of P,PI,PID controllers used in design of control system.

To understand the operating characteristics of servo motors, position control system.

To check the frequency response of first and second order systems.

Learning outcomes :

1. Understands the control analysis of P, PI & PID and observes practically
2. Finds the transfer function of motor, generator etc., which helps in mathematical model of control system
3. Finally students will do programmes in MATLAB software and for finding the stability etc., PLC programming which will help them in doing their projects

1. Time response of Second order system
2. Characteristics of Synchros
3. Programmable logic controller – Study and verification of truth tables of logic gates, and application of speed control of motor.
4. Effect of feedback on DC servo motor

5. Transfer function of DC motor

6. Effect of P, PD, PI, PID Controller on a second order systems

7. Lag and lead compensation – Magnitude and phase plot

8. Transfer function of DC generator

9. Temperature controller using PID

10. Characteristics of magnetic amplifiers

11. Characteristics of AC servo motor

Any Two Simulation Experiments are to be Conducted: -

1. Linear system analysis (Time domain analysis, Error analysis) using MATLAB.

2. Stability analysis (Bode, Root Locus, Nyquist) of Linear Time Invariant system using MATLAB

3. State space model for classical transfer function using MATLAB – Verification.

Reference Books:

1. MATLAB and its Tool Books user's manual and – Mathworks, USA.