

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

III Year B.Tech. EEE-II Sem

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**(A60290) CONTROL SYSTEMS AND SIMULATION LAB****Any Eight of the following experiments are to be conducted:**

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. 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. PSPICE simulation of Op-Amp based Integrator and Differentiator circuits.
2. Linear system analysis (Time domain analysis, Error analysis) using MATLAB.
3. Stability analysis (Bode, Root Locus, Nyquist) of Linear Time Invariant system using MATLAB.
4. State space model for classical transfer function using MATLAB – Verification.

**REFERENCE BOOKS:**

1. Simulation of Electrical and electronics Circuits using PSPICE – by M.H.Rashid, M/s PHI Publications.
2. PSPICE A/D user's manual – Microsim, USA.
3. PSPICE reference guide – Microsim, USA.
4. MATLAB and its Tool Books user's manual and – Mathworks, USA.