JIS College of Engineering
Department of Electronics & Communication Engineering
Course Name: Control Systems Lab
Course Code: EC692
Contacts: 0:0:3
Credit: 1.5

Course Outcomes:

Upon the completion of the course the students will be able to

CO1: Understand different types of electrical, mechanical and electromechanical systems.

CO2: Determine transient and steady state behavior of different types of systems using standard test signals.

CO3: Determine the importance of gain, location of poles and zeros to design a system.

CO4: Check the stability of the systems using the concept of different stability criterion.

CO5: Design the systems according to the desired specifications or requirements using different types of controller and compensator.

List of Experiments:

1. Familiarization with MATLAB Control SystemTool box and SIMULINK.
2. Study of the effect of feedback on systems.
3. Study of first order systems having different time constants.
4. Study of second order systems having different damping ratios.
5. Study of time response of different electrical and mechanical system.
6. Verificationandvalidationoftimedomainspecificationsofsecondordersystems.
7. Study of SteadyState errors for different types' of systems.
8. Study of system stability using Root locus technique.
9. Determination of Bode-plot and computation of gain crossover frequency, phase cross over frequency, gain margin and phase margin using MATLAB.
10. Study of closed loop stability using Nyquist plot.
11. Study of system representation using State Model.
12. Determination of PI, PD and PID controller action on first order simulated process.

13. Evaluation of steady-state error, setting time, percentage peak overshoots, gain margin and phase margin with addition of lead compensator/lag compensator in forward path transfer function using MATLAB.

Tuning of PID Controller.