EOPC2206 CONTROL SYSTEM LABORATORY (0-0-3)

Course Learning/Program Objectives:This course will enable students to:

PO1 Analyse DC motor position control system.
PO2 Investigate speed-torque characteristics of 2-phase AC servomotor and derive its transfer function.
PO3 Obtain frequency response of lag and lead compensators.
PO4 Study time response of second-order process with P, PI, and PID control, and implement PID control for servomotor.
PO5 Determine system transfer function using transfer function analyser.

Sl. No	Name of the Experiment	Hrs.
1.	Study of a dc motor driven position control system.	3
2.	Study of speed torque characteristics of two-phase AC servomotor and determination of its transfer function.	3
3.	Obtain the frequency response of a lag and lead compensator.	3
4.	To observe the time response of a second order process with P, PI and PID control and apply PID control to servomotor	3
5.	To determine the transfer function of a system (network) using transfer function analyser.	3
6.	To study and validate the controllers for a temperature control system	3
7.	To study the position control system using Synchroscope.	3
8.	To Analyse the Time Domain specifications of Under damped second order systemusing MATLAB.	3
9.	To analyse the stability of the system by using Root locususing MATLAB.	3
10.	To analyse the stability of the given linear system using Bode plotusing MATLAB.	3

Course Outcomes: On completion of this course, students are able to:

CO1 Analyse and assess the position control system of DC motors to evaluate system performance.
CO2 Investigate the speed-torque characteristics of a two-phase AC servomotor and derive its transfer function.
CO3 Design and evaluate the frequency response of lag and lead compensators for performance enhancement.
CO4 Observe and analyse the time response of second-order processes using P, PI, and PID controllers and implement PID control for a servomotor.
CO5 Determine and validate the transfer function of a system using a transfer function analyser.

Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5
CO1 (Analyse DC motor position control systems)	**3**	**-**	**-**	**-**	**-**
CO2 (Investigate speed-torque characteristics and derive transfer functions of AC servomotors)	**-**	**3**	**-**	**-**	**-**

CO3 (Obtain frequency response of lag and lead compensators.)	-	-	**3**	-	-
CO4 (Study time response and implement PID control for servomotors.)	-	-	-	**3**	-
CO5 (Determine transfer function using transfer function analyzer.)	-	-	-	-	**3**