Techno India NJR Institute of Technology

Academic Administration of Techno NJR Institute

Syllabus Deployment

Name of Faculty: Mr. Chandra Prakash Jain   Subject Code: 5EE4-22

Subject Name: Control System Lab   SEM: V

Department: Department of Electrical Engineering (EE & EEE)

Total no. of Labs planned: 11

COURSE OUTCOMES HERE
At the end of this course students will be able to
1 Will have a strong knowledge of MATLAB software
2 Will be able to do various engineering projects.
3 Ability to formulate transfer function for given control system problems.
4 Ability to find time response of given control system model.
5 Plot Root Locus and Bode plots for given control system model
6 Ability to design Lead, Lag, Lead-Lag systems in control systems

Lab No.	Topic
1	(a) Plot step response of a given TF and system in state-space. Take different values of damping ratio and natural undamped frequency. (b) Plot ramp response.
2	To design 1st order R-C circuits and observe its response with the following inputs and trace the curve. (a) Step (b) Ramp (c) Impulse

3	To design 2nd order electrical network and study its transient response for step input and following cases. (a) Under damped system (b) Over damped System. (c) Critically damped system.
4	To Study the frequency response of following compensating Networks, plot the graph and final out corner frequencies. (a) Leg Network (b) Lead Network. (c) Leg-lead Network.
5	Draw the bode plot in real time for a Non-Inverting amplifier.
6	Draw the bode plot in real time for an Inverting amplifier.
7	Draw the bode plot for second order transfer function.
8	Draw the bode plot for first order transfer function.
9	Design and analyse Tow- Thomas biquad filter.
10	Design and calculate Kp, Ki for PI controller.
11	Design PID controller and also calculate Kp, Ki, Kd for it.

TEXT/REFERENCE BOOKS
1. Smarjit Ghosh, Control Systems: Theory and Applications, 2/e, Pearson Publisher. 2004
2 Dhannesh N. Manik: Control System, Cengage Learning. 2012
3 I. J. Nagrath and M. Gopal: Control Systems Engineering, 3rd Ed, New Age Publication.
4 K. R. Varmah: Control Systems, MGH 2010
5 Anandnatrajan et. al.: Control Systems Engineering, 4th ed., Scitech Pub.

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पंकज पोरवाल

Dr. Pankaj Kumar Porwal
(Principal)