Techno India NJR Institute of Technology

Academic Administration of Techno NJR Institute

Syllabus Deployment

Name of Faculty: Mr. Chandra Prakash Jain Subject Code: 5EX4-22

Subject Name: Control System Lab SEM: V

Department: Department of Electrical Engineering (EE & EEE)

Total no. of Labs planned: 11

COURSE OUTCOMES HERE

Atthe 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.

For Techno India NJR Institute of Technology

पंकज पोरवाल

Dr. Pankaj Kumar Porwal

(Principal)

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 AgePublication.
4 K. R. Varmah: Control Systems, MGH 2010
5 Anandnatrajan et. al.: Control Systems Engineering, 4th ed., Scitech Pub.