

Department: Electronics and Communication Engineering

## **CONTROL SYSTEM LAB**

**(KEC-652)**

### **LIST OF EXPERIMENTS**

**(As per AKTU Syllabus)**

1. Introduction to MATLAB Control System Toolbox.
2. Determine transpose, inverse values of the given matrix.
3. Plot the pole-zero configuration in the s-plane for the given transfer function.
4. Determine the transfer function for a given closed loop system in block diagram representation.
5. Create the state space model of a linear continuous system.
6. Determine the State Space representations of the given transfer function.
7. Determine the time response of the given system subjected to any arbitrary input.
8. Plot the unit-step response of the given transfer function and find delay time, rise time, peak time, peak overshoot, and settling time.
9. Determine the steady state errors of a given transfer function.
10. Plot the root locus of the given transfer function, and locate closed-loop poles for different values of  $k$ .
11. Plot bode plot of given transfer function. Also, determine gain and phase margins.
12. Plot Nyquist plot for the given transfer function. Also determine the relative stability by measuring gain and phase margin.

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**Software Required: MATLAB**

For smooth conduction of the same lab, we have the following Equipment:

1. Computer System: - We have 40 latest computer systems with high configuration in the laboratory for conducting the lab. All the computer system is installed with the latest version of MATLAB software. We provide one computer system to one student to complete his/her experiment.
2. Software: - We have the latest version of MATLAB software installed in all the systems and updating from time to time as per requirement.