EXPERIMENT NO.12: Specification of Step Response For Control System

Commands:

ord2,step,damp

For example: wn=2,damping (ζ) =0.707
[num,den]=ord2(wn,ζ)
step (num,den)
[wn, damping]=damp(num,den)
or
sys=tf(num,den)
[wn,damping]=damp(sys)

Cases:

$$1-G(s)=\frac{10}{s+13}$$

$$2-G(s)=\frac{1}{0.1+1}$$

$$3-G(s)=\frac{9}{s^2+2s+9}$$

$$4-G(s)=\frac{15}{s^2+7s+9}$$

$$5-G(s)=\frac{25}{s^2+7s+13}$$

$$6-G(s)=\frac{(s+1)}{(s+5)(0.1s+1)}$$

For the above cases find the specification of step response (tr,td,tp,Mp,e s.s)and for 2nd order transfer function find the wn & ζ and theoretical solve the 2nd order T.F to find all the above specification and compare with the results of program.

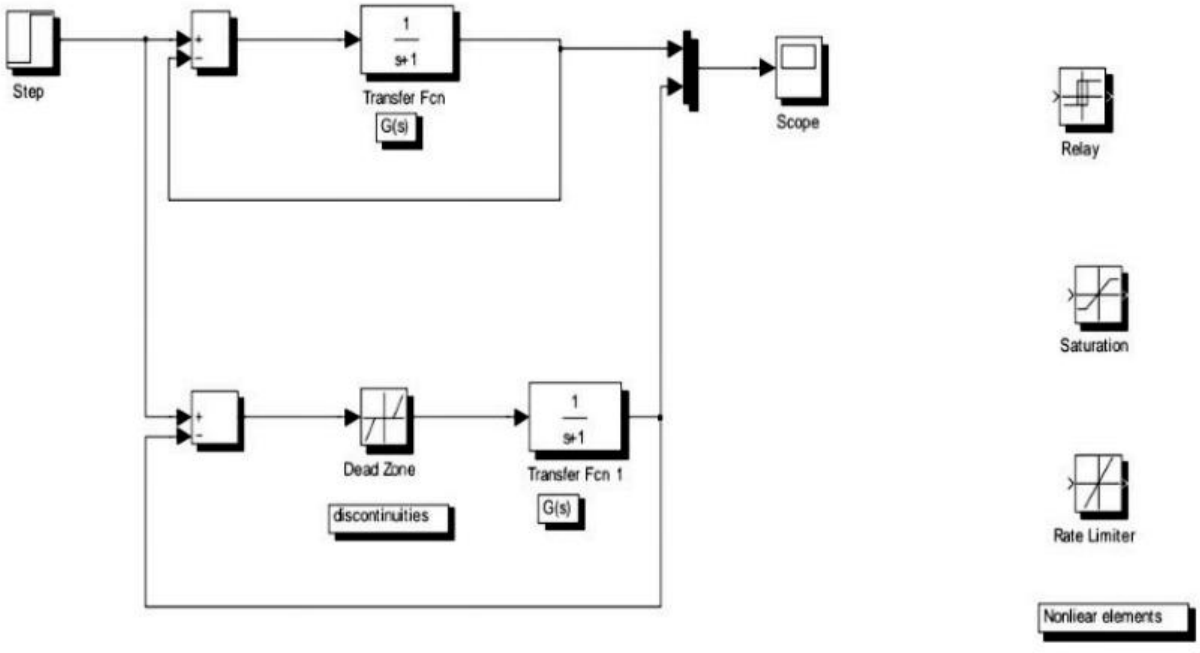
Experiment no. 13:The effect of nonlinear element on the response of the control system

Objective:

1-To learn how to describe the effect of nonlinear element on the response of the control system .
2-To observe the output response of control system without nonlinear & with nonlinear control system,

Procedure:

1-Run Matlab by selecting [start] →Matlab 6.5 →Matlab command window opens.
2-In Matlab command window →Simulink.
3-In untitled window draw the block diagram as shown in figure below.



4-Set the step block step time to zero.