Steady State Error Analysis

using Simulink

Lab: 09

Fall 2022

CSE-3L Control Systems

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Class Section: **B**

"On my honor, as a student of the University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work."

Student Signature: _____

Submitted to:

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Objectives:

- To know about steady-state error.

Tasks:

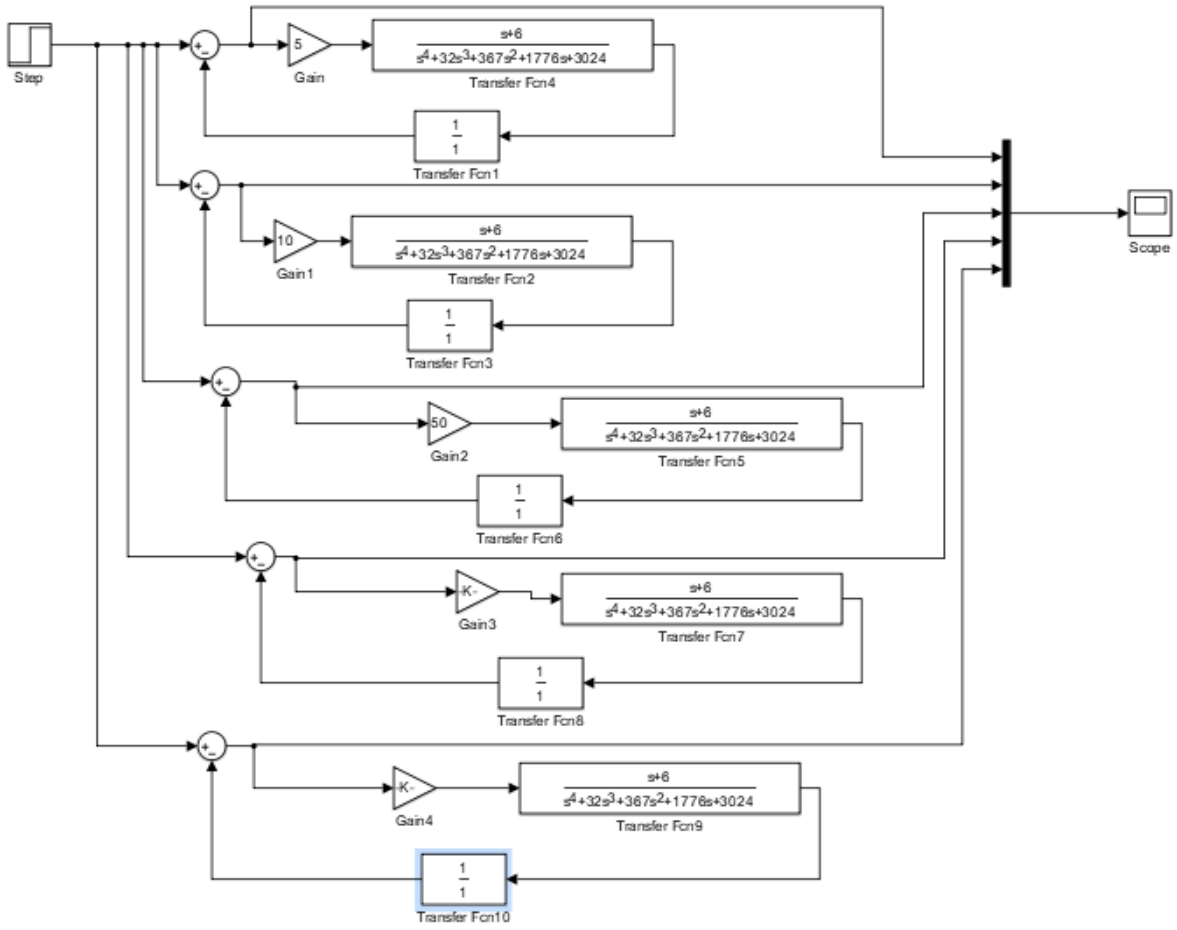
Setup negative feedback system for the following system:

G(s) = k(s+6) / (s+4) (s+7) (s+9) (s+12)

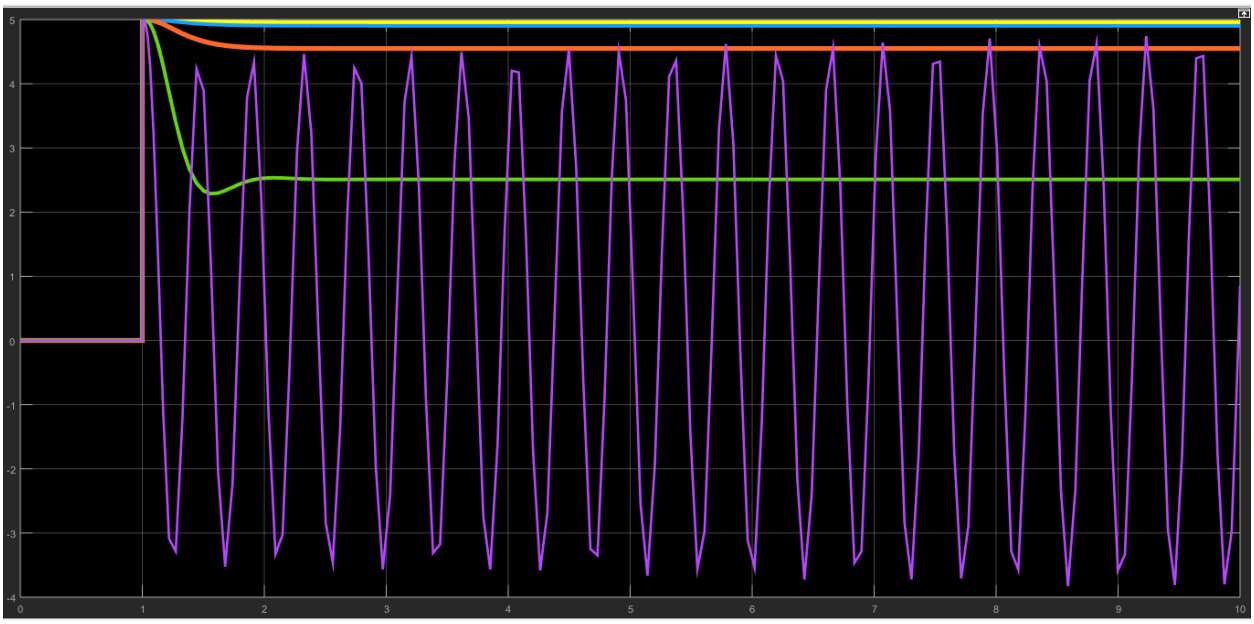
H(s) = 1

Plot on one graph the error signal for

1. Input = 5u(t) with k = 5,10,50,500,5000



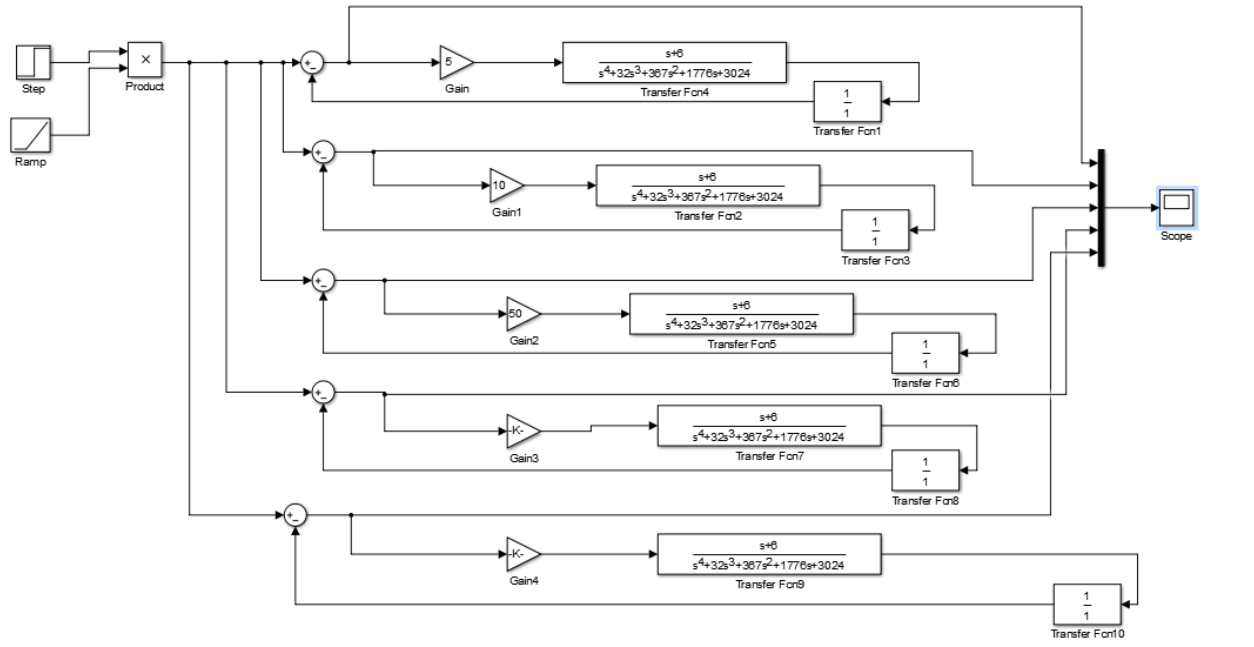
Output:



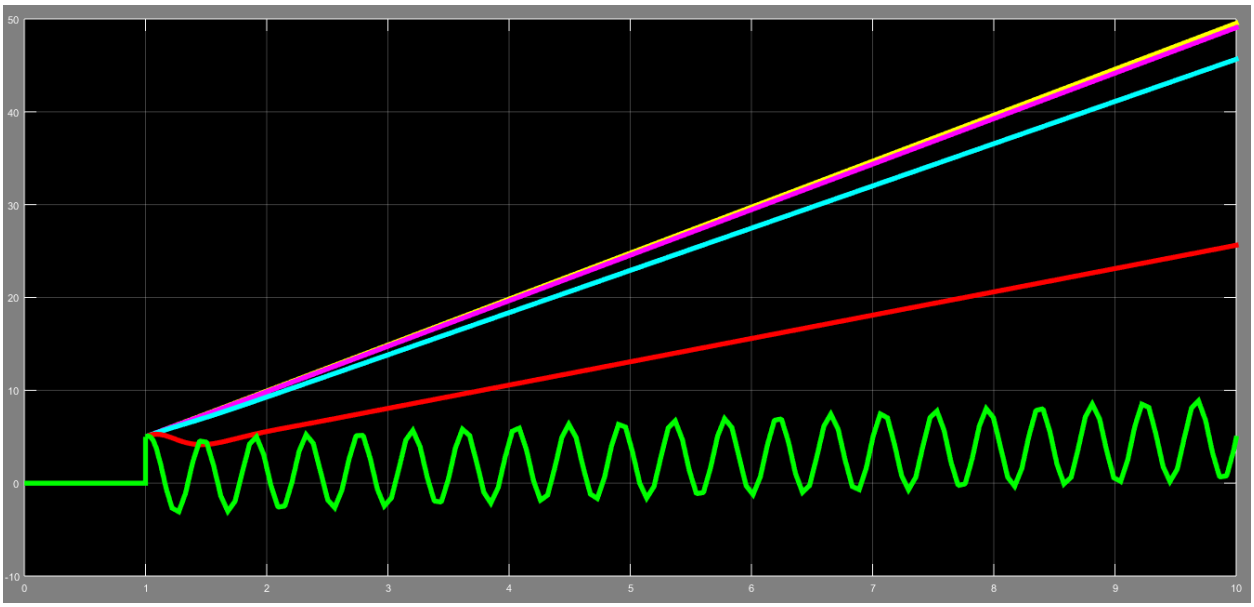
Task 02:

2. Input = 5tu(t) with k = 5,10,50,500,5000

Simulink Design:



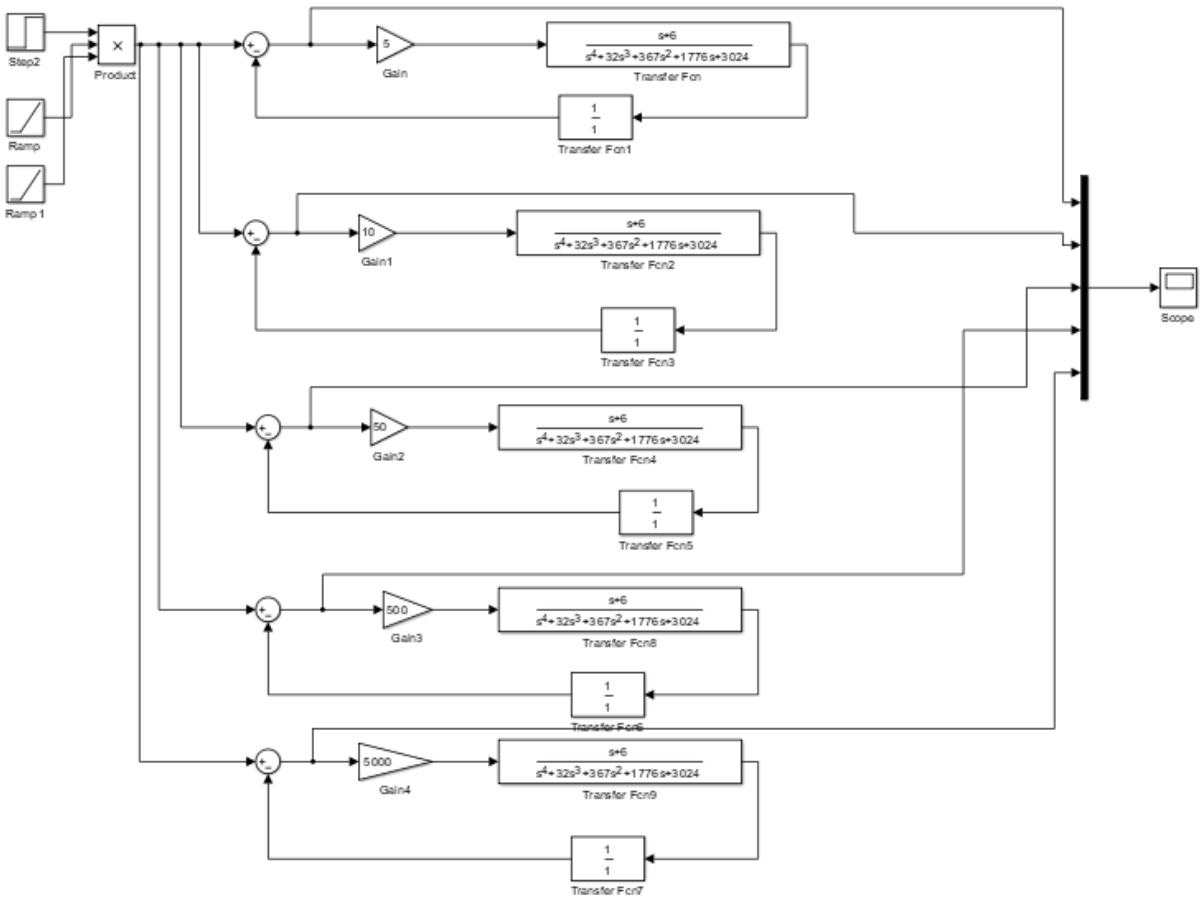
Output:



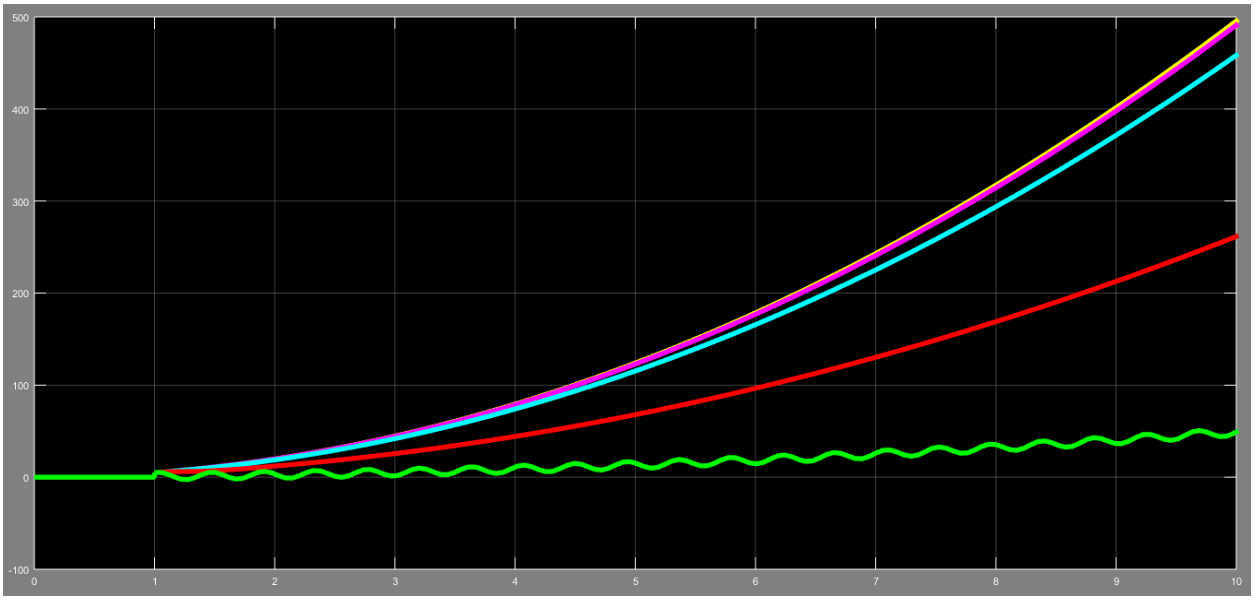
Task 03:

3. Input = 5t^2u(t) with k = 5,10,50,500,5000

Simulink Design:


Step2
Ramp
Ramp1
Product
5
Gain
s+6
s^4+32s^3+367s^2+1776s+3024
Transfer Fcn
1
1
Transfer Fcn1
10
Gain1
Transfer Fcn2
Transfer Fcn3
50
Gain2
Transfer Fcn4
Transfer Fcn5
500
Gain3
Transfer Fcn8
Transfer Fcn6
5000
Gain4
Transfer Fcn9
Transfer Fcn7
Scope

Output:


500
400
300
200
100
0
-100
0
1
2
3
4
5
6
7
8
9
10