

Lab Session 08

Exercise:

Obtain the response of the following transfer function for an input $r(t) = \sin(t) + e^{(-0.2t)}$ for $t = 0$ to 60 sec, in a step size of 0.001 sec and comment on the result.

$$\frac{30}{s^2 + 5s + 30}$$

Write MATLAB script to solve the above problem. Attach the script (handwritten) and plot with this document.

Nothing to write below this line. Use A4 sheet to write script and attach it with document. Also, attach properly cropped graph with this document.

PROGRAM SCRIPT:-

- 1- clear, clc, close
- 2- $n = [0 \ 0 \ 30];$
- 3- $d = [1 \ 5 \ 30];$
- 4- $sys = tf(n,d)$
- 5- $t = 0:0.001:60;$
- 6- $r = \sin(t) + \exp(-0.2 * t);$
- 7- $y = \text{sim}(sys, r, t);$
- 8- $\text{plot}(t, r, '-r', t, y, '--k');$
- 9- $\text{legend}('Input', 'Output');$ grid;
- 10- $\text{title}('Response of system } G(s) = 30/(s^2 + 5s + 30) \text{ for input } r(t) = \sin(t) + \exp(-0.2 * t)');$
- 11- $\text{xlabel}('Time');$
- 12- $\text{ylabel}('Amplitude');$

COMMENT:-

The given transfer function gives approximate same responses of desired and actual with least error at an input of $\sin(t) + e^{-0.2t}$.

