EE324 Control Systems Lab

Problem Sheet 1

Name | Roll Number

Question 1

Part A

Describe solution here like below

$$G_{eff}(z) = \frac{(s+z)}{s(s+3)(s+4)(s+12)}$$

Where z =0.01. Finding the intersection of the Root Locus with the Constant Damping Ratio Lines which is the Radial line corresponding to $cos^{-1}(0.2)$, we get gain K=666.3

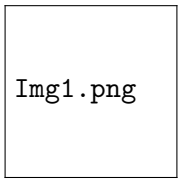

Figure 1: .....

Write the Scilab Code here like below
Scilab Code for the same:

```
s = poly(0,'s')
G = (s+0.01)/((s+3)*(s+4)*(s+12)*s)
evans(G,800)
r = linspace(0,-3,10);
up_line = tan(78.46304097*%pi/180)*r;
dn_line = -tan(78.46304097*%pi/180)*r;
plot(r,[up_line; dn_line],'r-.')
```

Part B

Describe the Solution here

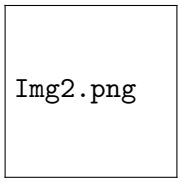

Figure 2: .....

```
s=poly(0,'s');
g=1/((s+3)*(s+4)*(s+12));
g_new=g*(s+0.01)/s;
evans(g_new,1700);
sgrid(0.1:0.4:0.9, 8:1:9);
```

Question 2

Part A

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Part B

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Part C

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Question 3

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