

Control System Laboratory Report

Name and ID no. of the Student:

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Title of the Experiment:

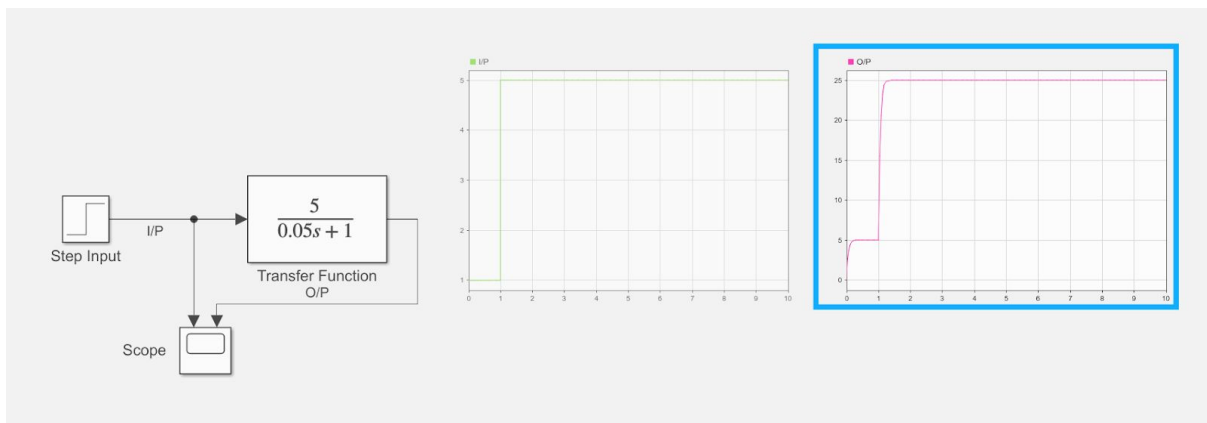
Bump Test Modeling

Model/Simulation:

MATLAB CODE:

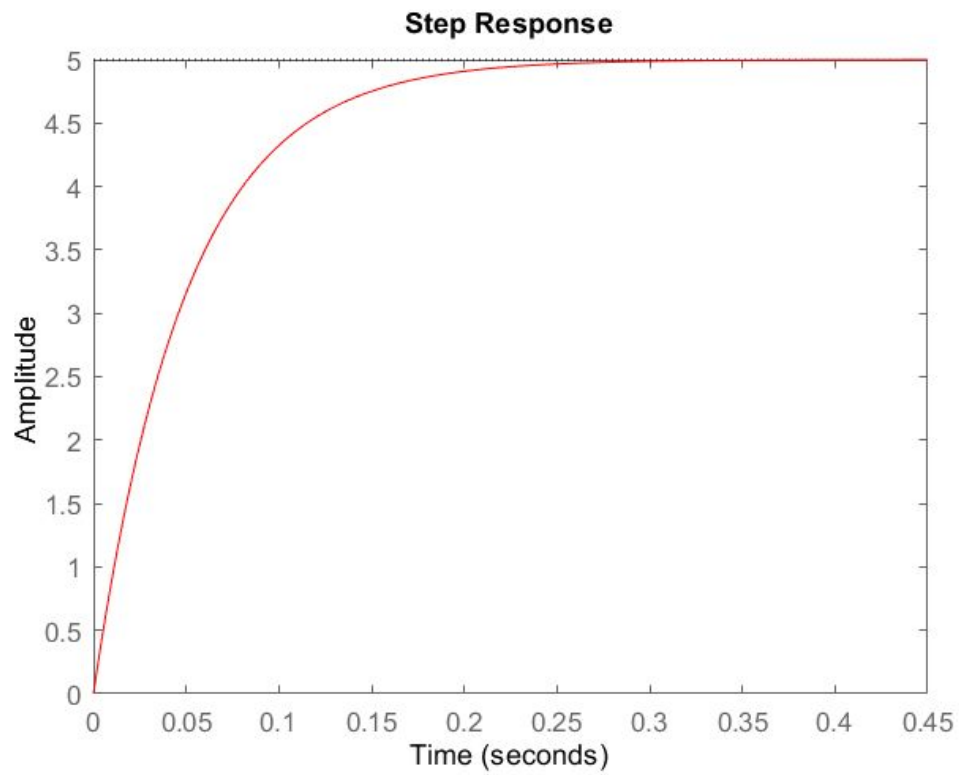
```
num = [5];  
den = [0.05 1];  
g = tf(num,den)  
step(g,'r')  
stepinfo(g)
```

SIMULINK:

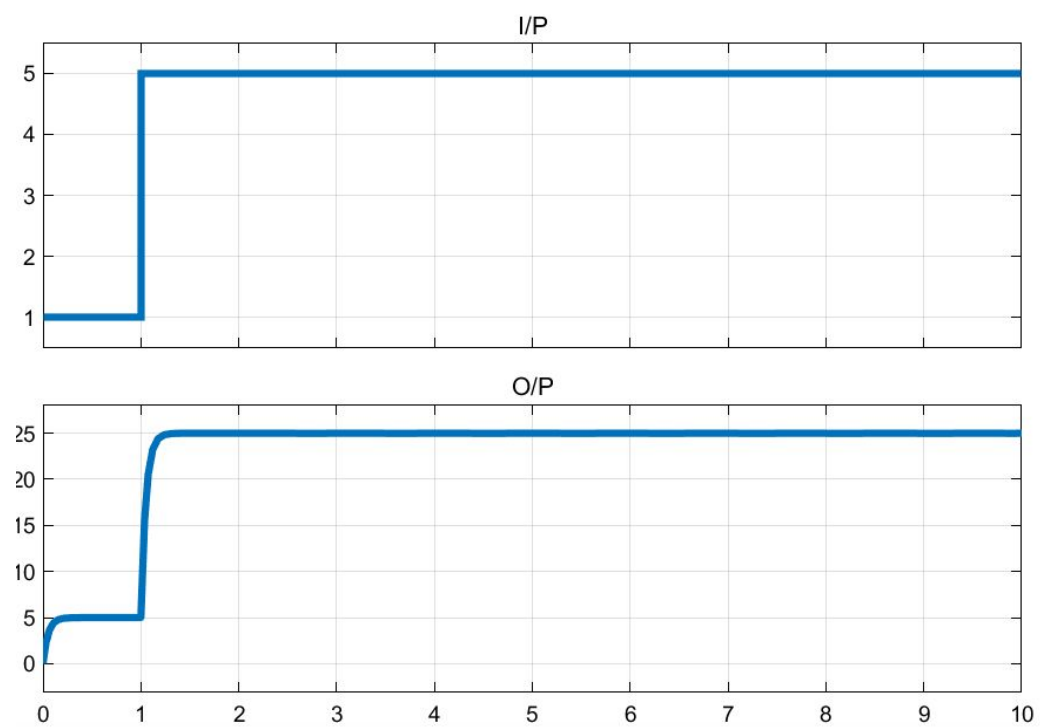


Results:

For MATLAB code:



SIMULINK MODEL RESULT:



Conclusive remarks:

Using MATLAB code, we have modelled a first order system with gain, $K=5$ and time constant, $\tau=0.05$.

From the MATLAB code simulation we can conclude that the final step response is 5 times the input signal which has a magnitude of 1 which coincides with the given condition in the question as gain is 5.

Along with that the other parameters can be calculated for a unit step input:

RiseTime: 0.1099

SettlingTime: 0.1956

SettlingMin: 4.5225

SettlingMax: 4.9999

For the SIMULINK model having an input of $u(t) + 4*u(t-1)$ the output is also time shifted by 1 unit and the final value settlement value is 25 which is five times the input value that also coincides with the given gain value of the system which is 5.