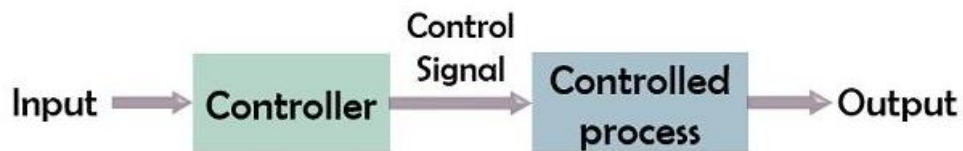


Simulate Open loop & Closed loop Control of P, PI, PD, PID Controllers using MATLAB software.

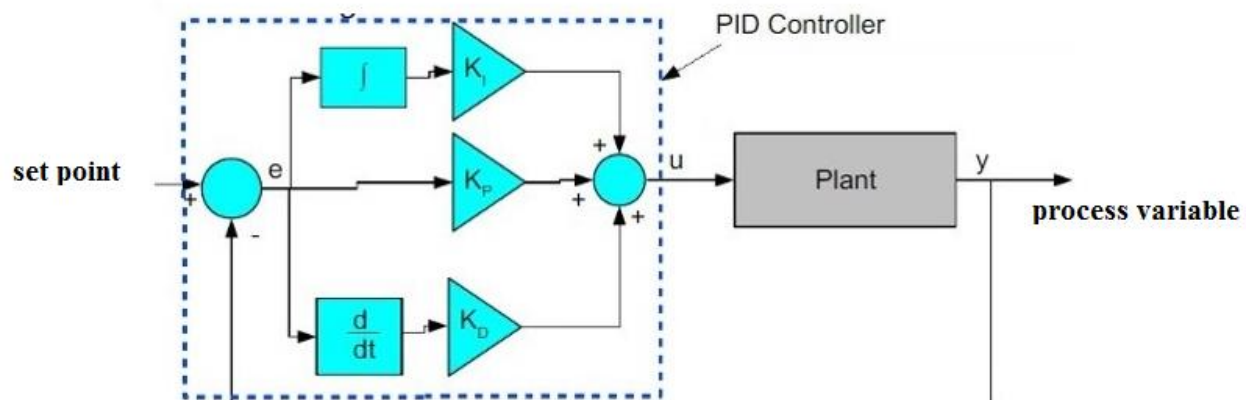
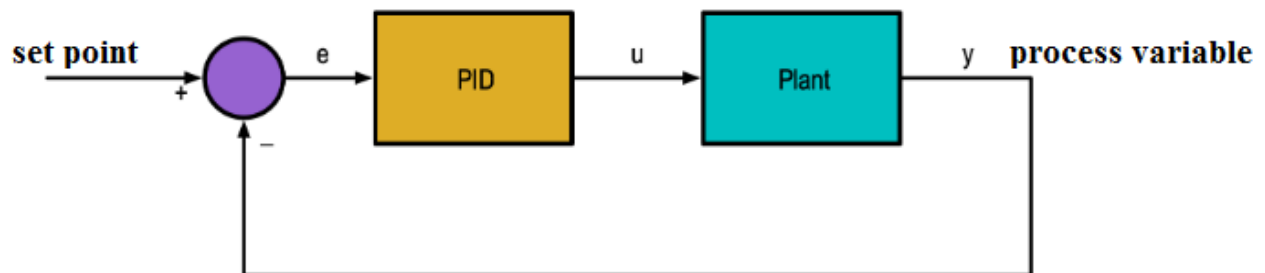
Aim: To simulate open loop & closed loop control of P, PI, PD, PID Controllers using MATLAB software.

Block Diagram:

Open Loop control system:



Closed Loop control system:



Procedure:

1. Double click on MATLAB icon on the desktop

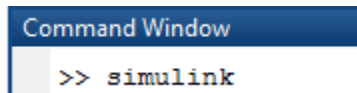


2. Click on Simulink in the toolbar section

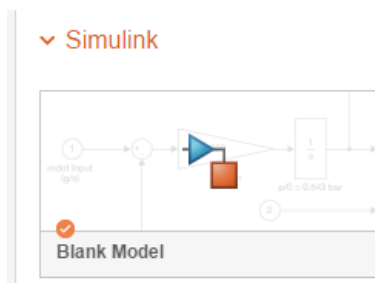


OR

Type the Simulink in the Command window



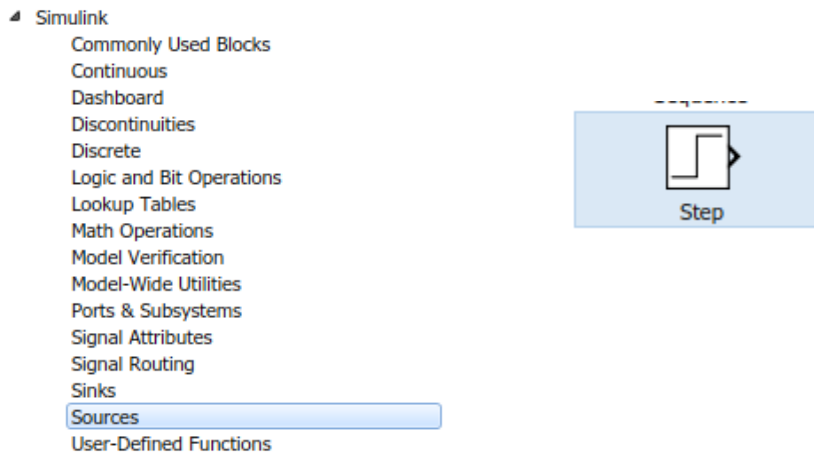
3. Click on the Blank model in the Simulink window



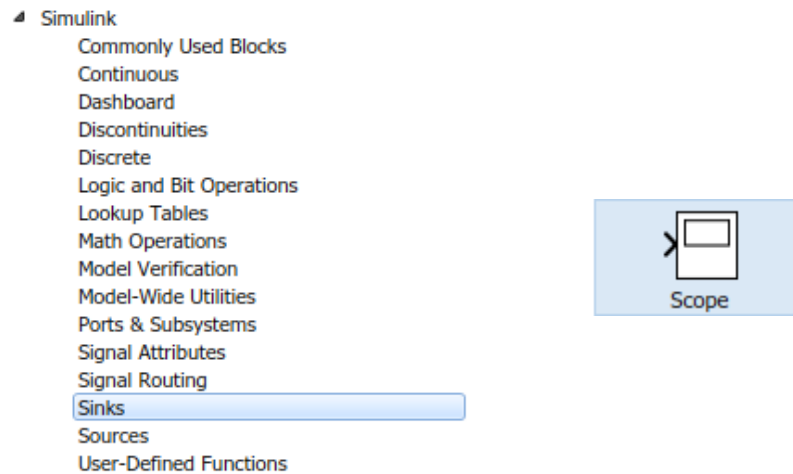
4. Click on Library browser



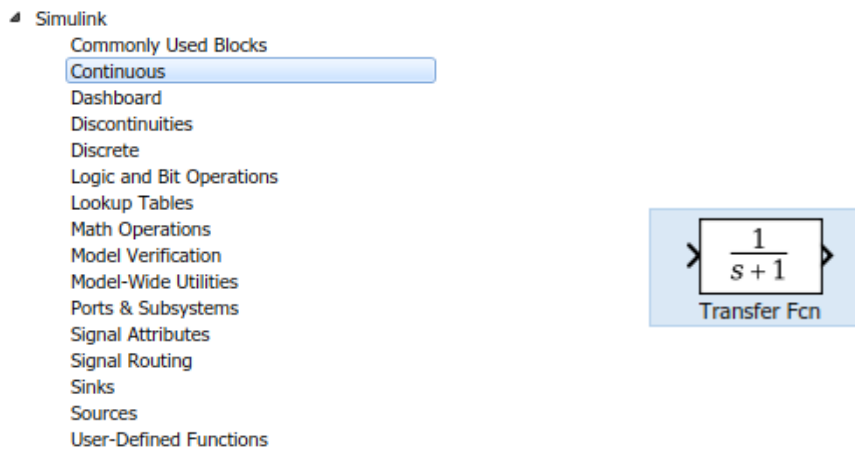
5. Click on sources in the simulink then select step function by Right click add block to model untitled.



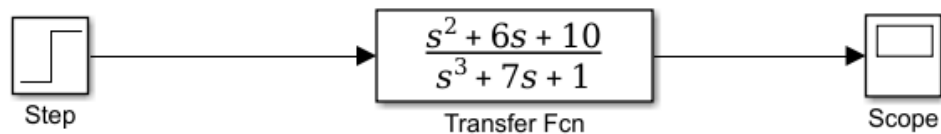
6. Click on sinks, select scope output by right click add block to model untitled.



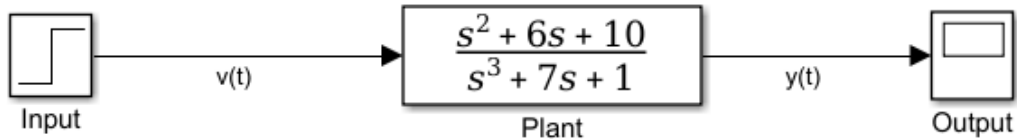
- Click on continuous, select transfer function by right click add block to model untitled. Double click on transfer function to select poles and zeros depending on the application.



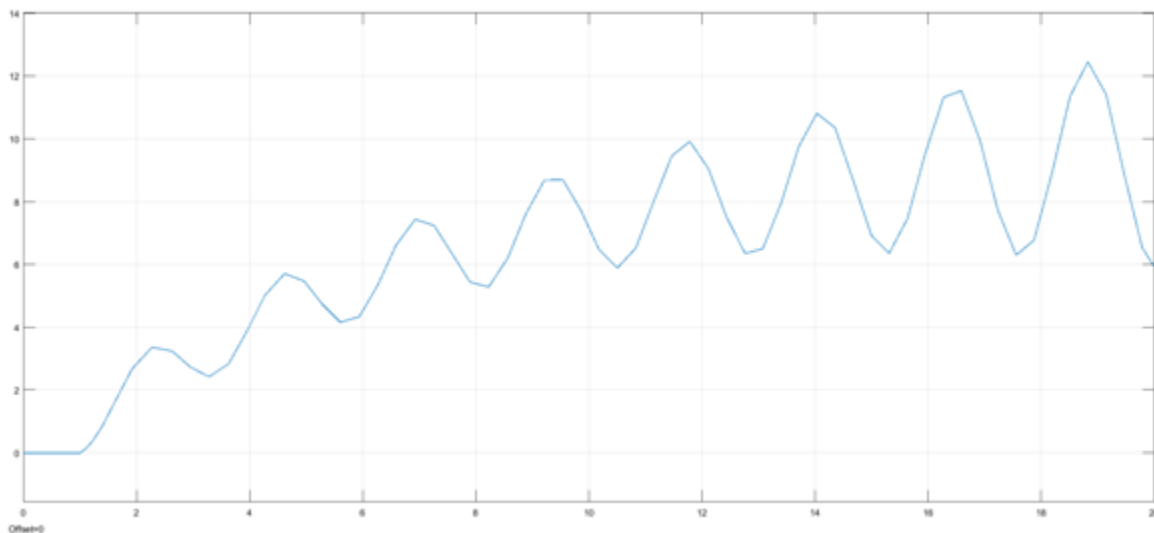
- Close the simulink library browser and arrange the blocks in the order step, transfer function, scope.



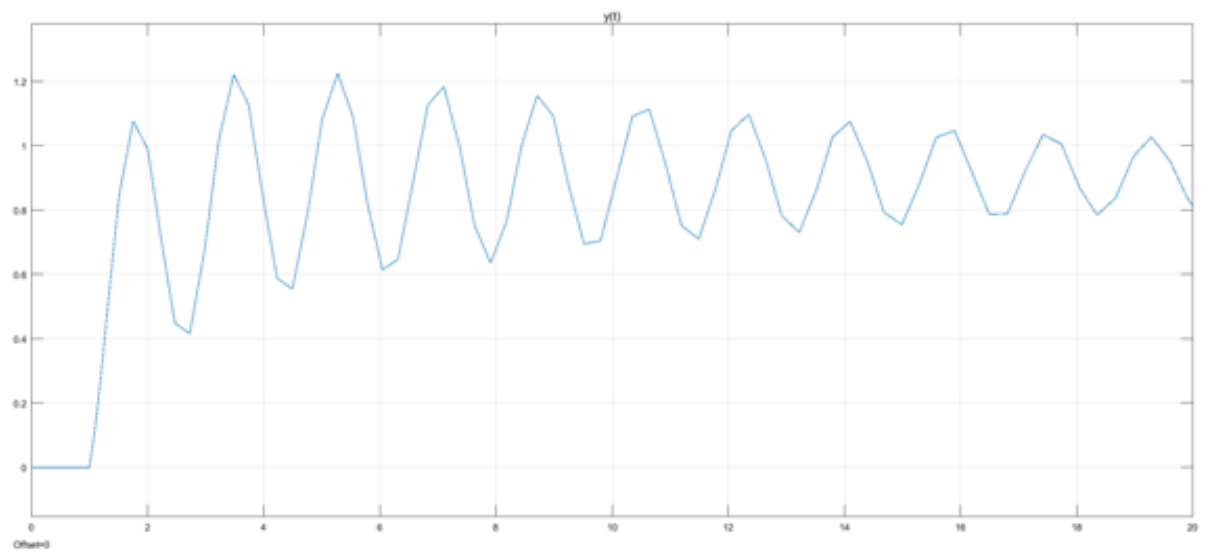
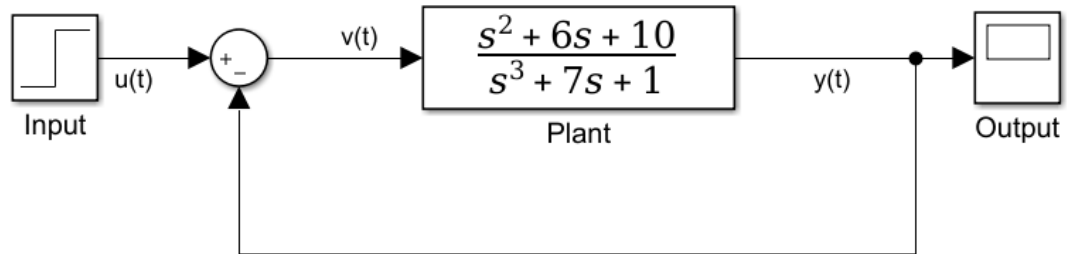
Rename the functions for better understanding.



- Double click step function set the range then click on RUN then double click scope for the waveform.

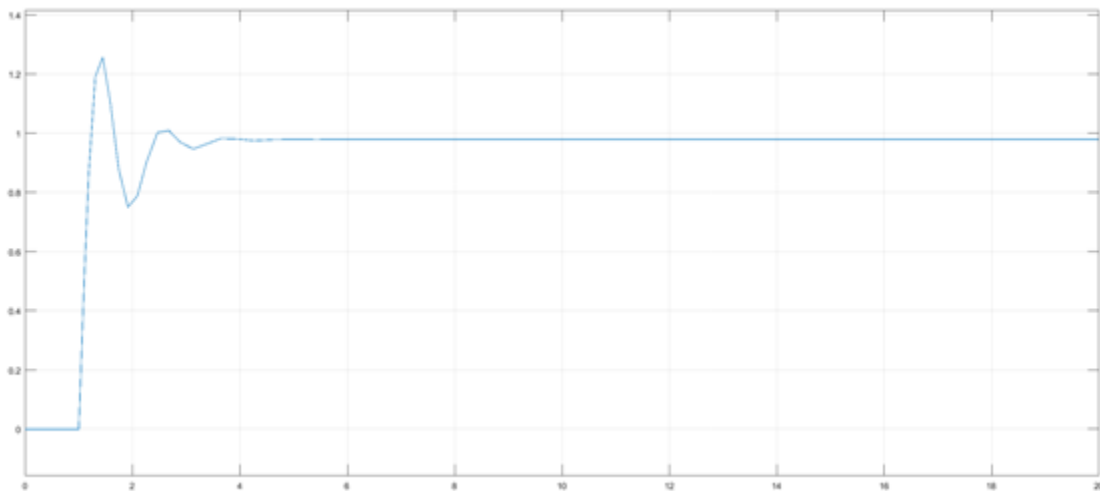
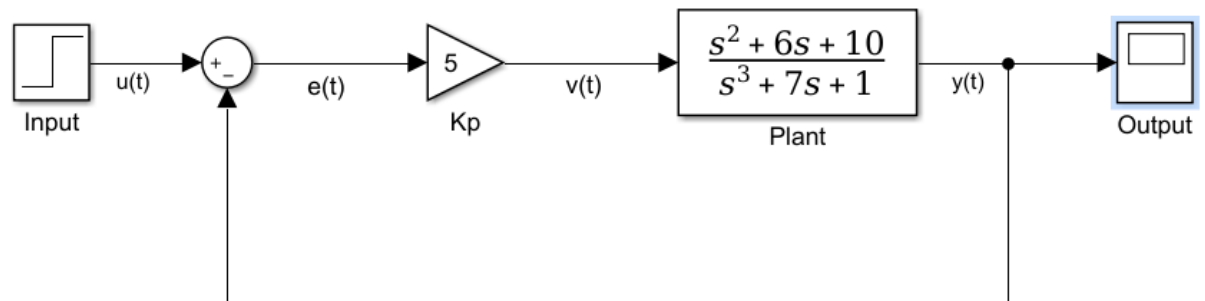


10. Disconnect the blocks by holding mouse and control key. Place the Sum block from commonly used blocks. Double click on sum block to change signs and connect output to sum block to create closed loop connection.

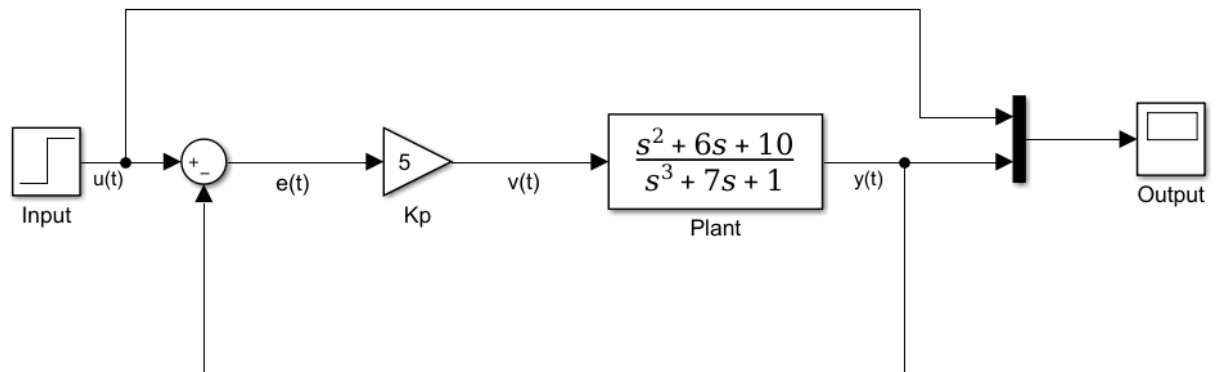


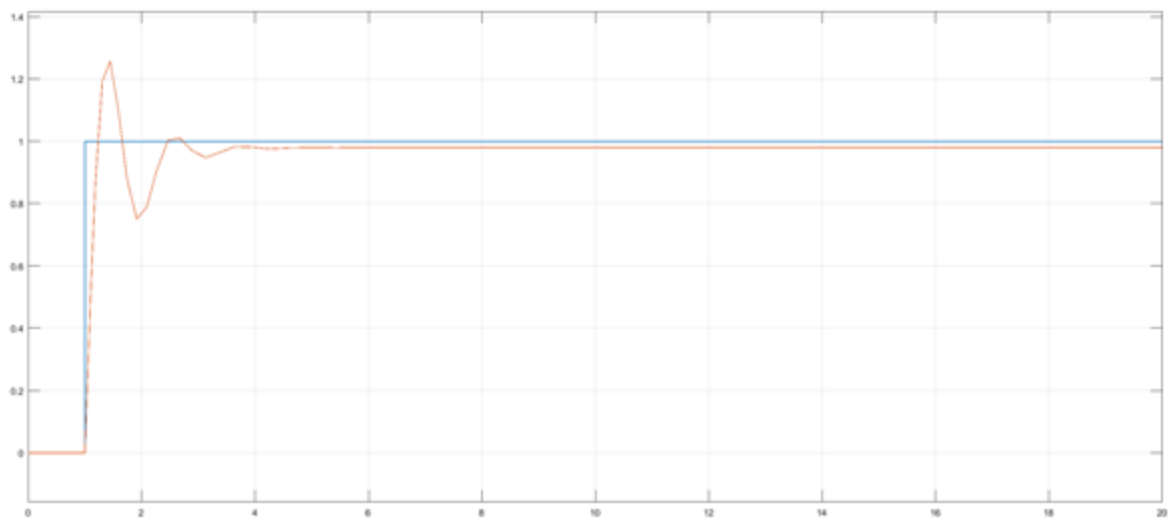
Proportional (P) Controller

11. Go to simulink library select Gain block in the commonly used blocks and connect to Plant. Click on RUN and double click on scope to check the output waveform.



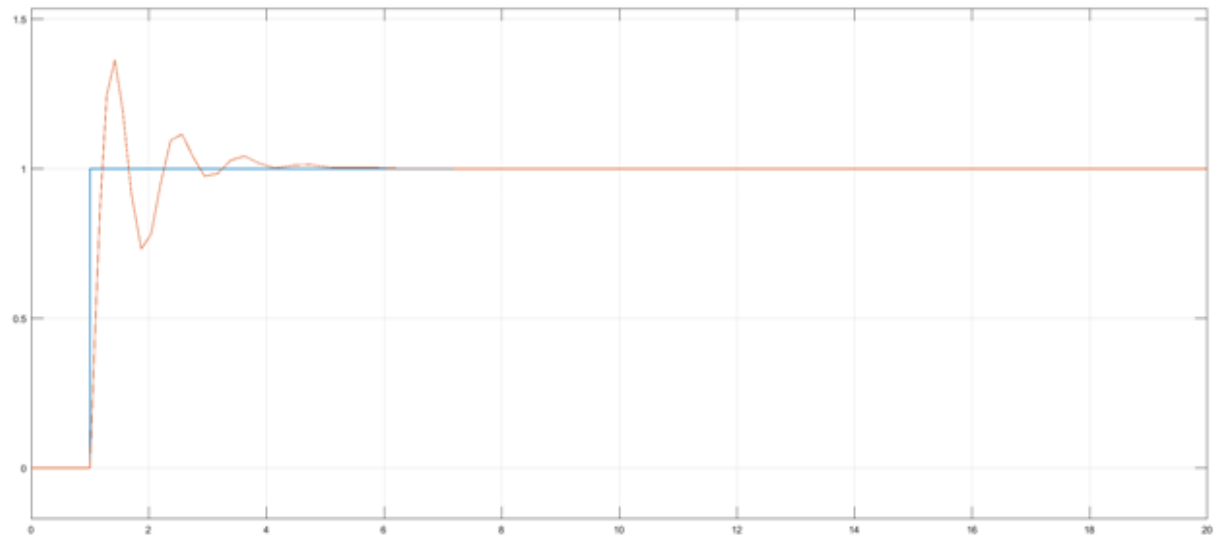
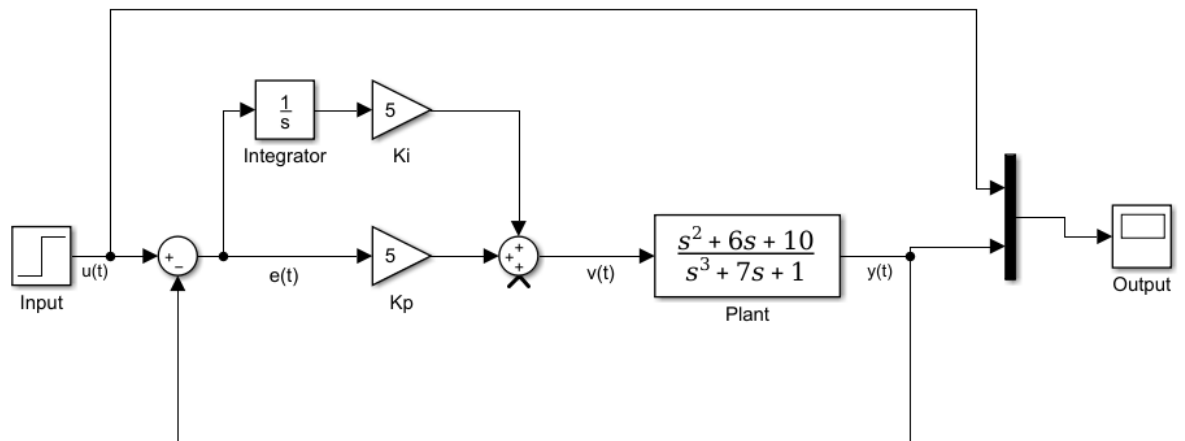
12. To see input and output simultaneously go to library browser select MUX block and connect as shown below





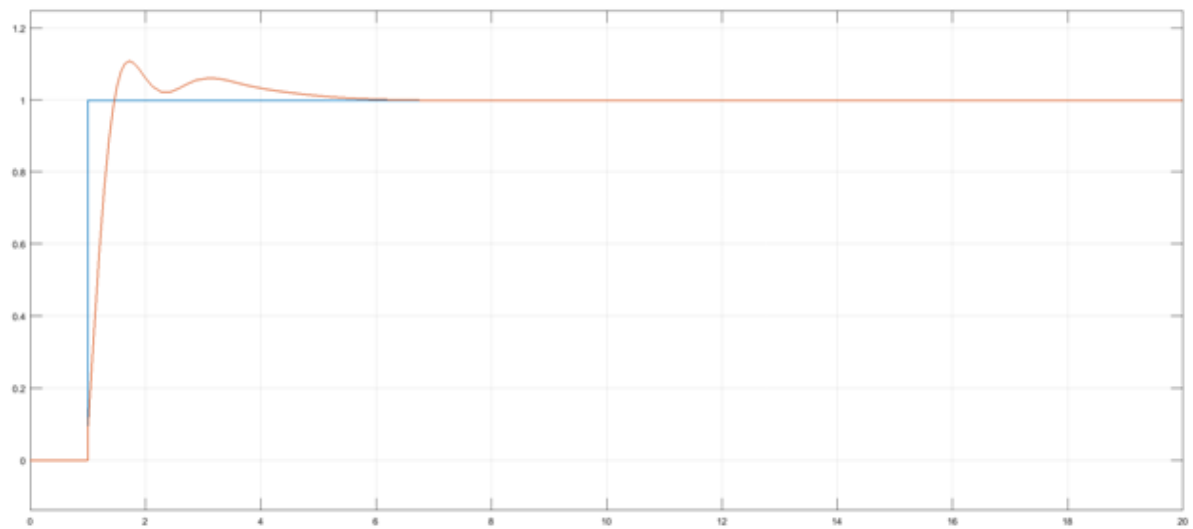
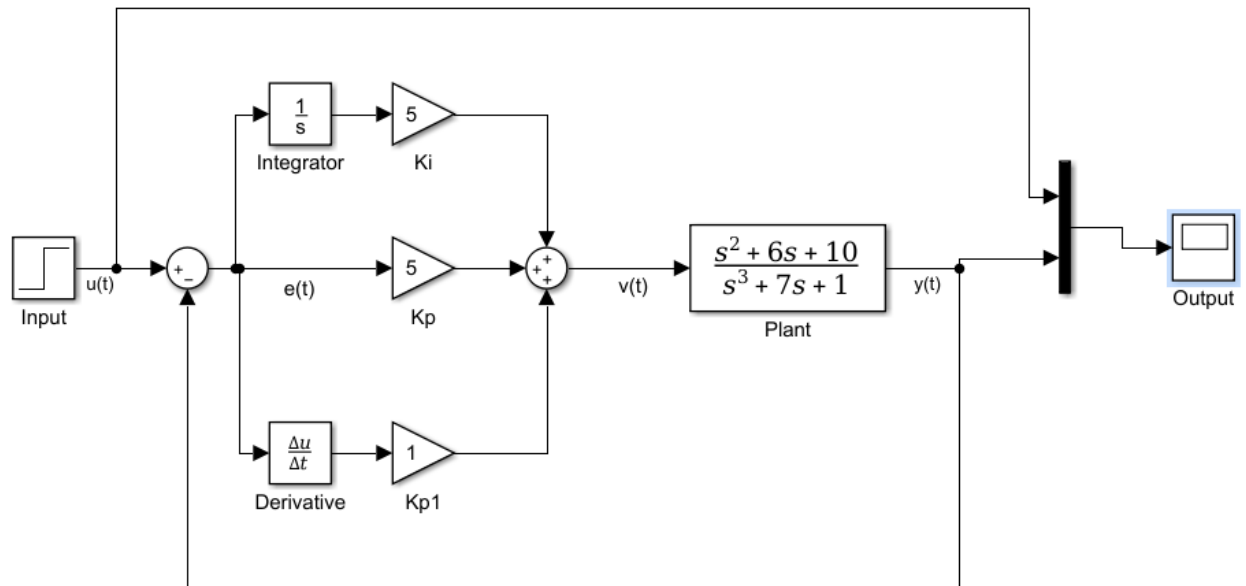
Proportional, Integral (PI) Controller

13. Go to library browser and select integrator block and sum block and connect as shown below



Proportional, Integral & Derivative (PID) Controller

14. Go to library browser select derivative block and connect as shown below



PID controller using PID block

15. Go to library browser select PID controller block and connect as shown below. Double click on PID Controller block to change different values for P, I & D.

