

## Experiment No. 5

### AIM

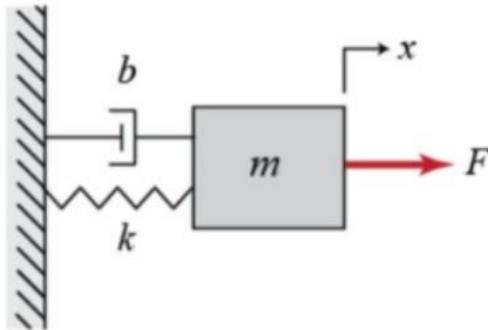
- (a) Study of time response of 2nd Order System using Proportional-Integral-Derivative (PID) Controller.
- (b) Compare P, PI and PID control responses for the given transfer function model.

### REQUIREMENTS

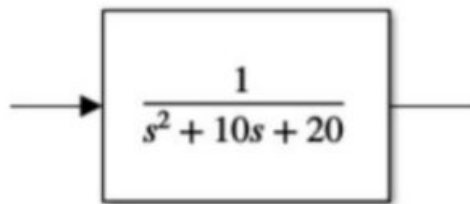
A Laptop, MATLAB Simulink software by MathWorks INC.

### OBJECTIVE

To Plot Step Response and compare Open Loop System with Closed Loop PID Controller for 2nd order system (mass-spring-damper system) and compare the responses for P, PI and PID controllers using Simulink.



**Fig.1:** 2nd order system (spring-mass-damper system)

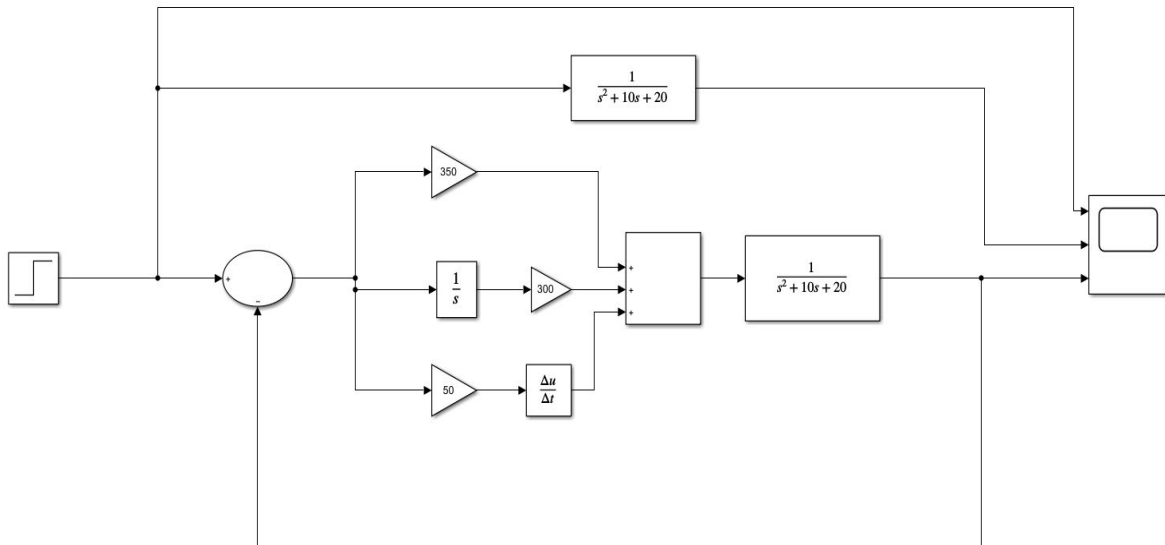


**Fig.2:** System Transfer Function

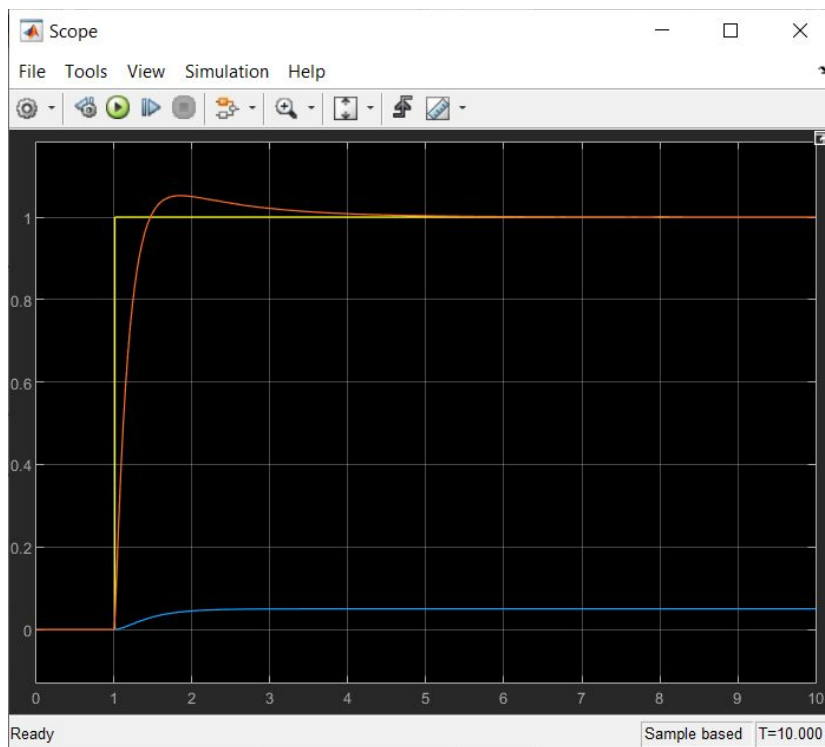
*Ishan Khanna*  
*2K19/EE/120*  
*EE2 P3*

## Experiment No. 5

### SIMULINK MODEL



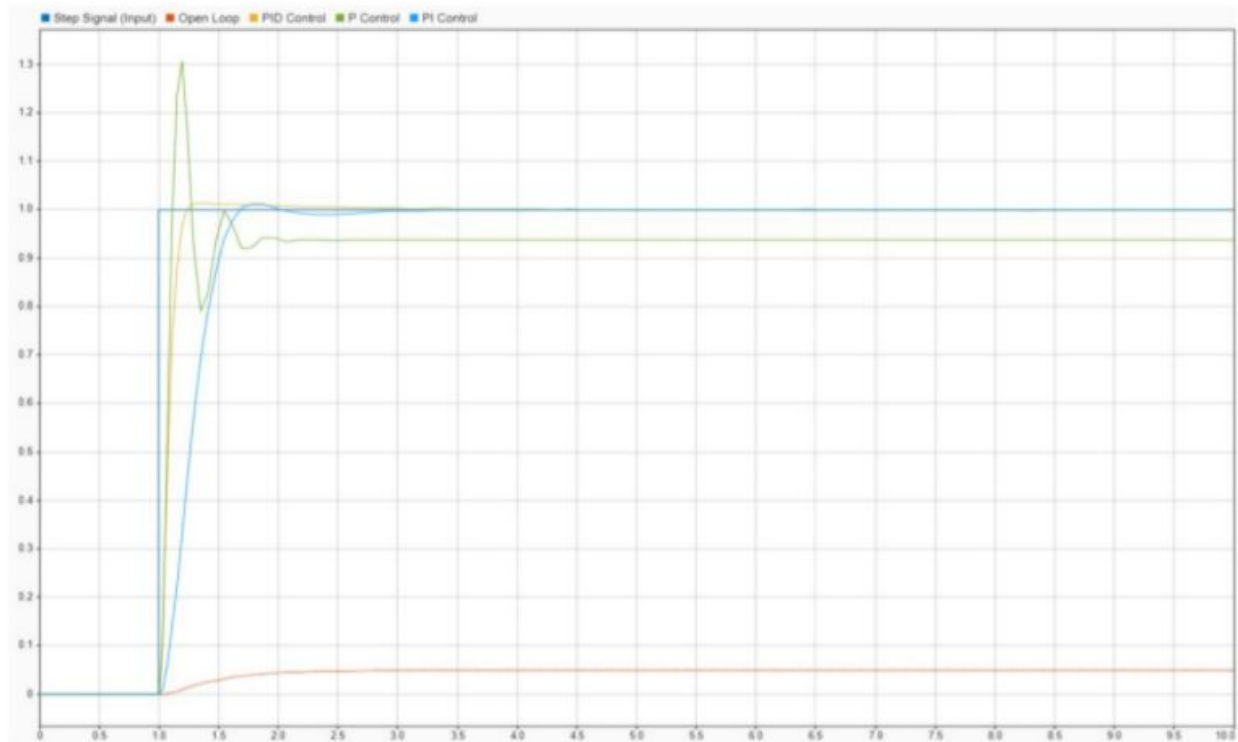
### OBSERVATIONS



Ishan Khanna  
2K19/EE/120  
EE2 P3

## Experiment No. 5

### COMPARISON OF 3 CONTROLLERS



### RESULT

The time response of P controller, PI controller and PID controller were obtained by the simulink models.

The difference in the plots can be easily seen in the above graph.

*Ishan Khanna*  
*2K19/EE/120*  
*EE2 P3*

## Experiment No. 5

*Ishan Khanna*  
*2K19/EE/120*  
*EE2 P3*

## Experiment No. 5

*Ishan Khanna*  
*2K19/EE/120*  
*EE2 P3*