

Experiment no. 16:

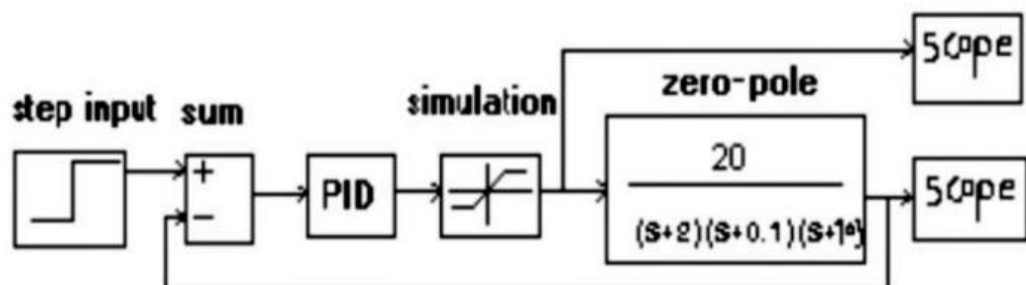
simulation of PID controller using simulink.

Object :

Using PID controller to control the performance of a plant , by using MATLAB SIMULINK.

Theory:

The first step in this experiment of PID control is to use SIMULINK to create following sys.



there are many ways to determine the appropriate gains for a PID controller.

$$C(S)=K_p + K_i /S + K_d S$$

K_p =proportional , K_i/S =integral , $K_d S$ =differential.

Actually , the $K_d S$ part of the controller is not really implementable. For this reason given above , we set $K_d=0$, this changes the controller into PI controller.

Or , by multiplying the part (KdS) by (zero-pole)block.
Now , to find the rootlocus plot of the PID plant .

Program:

```
Clear
Num=20*[1 0.11];
Den=conv([1 10], conv(1 0.1), conv([1 0], [1 2]));
Rlocus(num , den)
Sgrid([0.707], [1])
Axis([-1 0 -1 1])
[Kp , poles]=rlocfind(num , den)
Ki=0.11 * Kp
```