

Experiment No. 10

Title: Effect of P, PI, PD and PID control action on control system.

Objectives:

1. To plot the step response for P, PI, PD and PID control systems with unity feedback.
2. To compare the effect of P, PI, PD and PID control action on time response specifications.

MATLAB:

1. A unity gain feedback system has open loop transfer functions $G(s)H(s) = \frac{1}{s^2+10s+20}$. Write a programme in MATLAB to plot the step response for,
 - a) given system.
 - b) proportional control with $Kp = 350$
 - c) integral control with $Ki = 300$
 - d) derivative control with $Kd = 50$
 - e) PID control with $Kp = 350, Ki = 300, Kd = 50$
2. Mark time response specifications on all the graphs in Q.1.
3. Prepare a table of comparison for rise time, peak time and peak overshoot for step responses observed in Q.1.

Conclusion: (Hint: Write your interpretation from output graphs)