Assignment 2

Relay Feedback Test and Anti-reset Windup

A SISO process is given to you. Obtain K_U and P_U for the same using the relay feedback test. Compare the estimated K_U and P_U with the actual K_U and P_U. Also estimate K_U and P_U using a first order plus deadtime fitted model using the 28.3 and 63.2 open loop step response completion times (i.e. $t_{28.3}$ and $t_{63.2}$).

Use the relay feedback test estimates to obtain the Zeigler Nichols and Tyreus Luyben tuning parameters for PI and PID controllers. Obtain the ZN and TL PI and PID control servo and regulator responses and comment on the tightness of control as well as the control effort.

Implement antireset windup schemes (external reset feedback, switching off integrator and supplementary feedback) and quantify the improvement in control for a candidate large disturbance that results in control input saturation.

Submit a short report on the exercise.