EE380 (Control Systems) Lab work of Experiment 3.

Student Name	Roll No.	Bench No.

Q11 Program the discretized version of $H(s)$ in your dsPIC. Use the k_{cr} obtained in Q3. Give a step input and see the CL response. If sustained oscillations of the CL system are not seen, then tune k_{cr} until you hit a value that provides sustained oscillations.

The value of k_{cr} is [ ] and the corresponding value of P_{cr} is [ ]

Q12 With the value of k_{cr} and P_{cr} that you determined in Q11, form a PID controller as shown in Figure 4.1 of the lab manual.

$$C(s) = k_p\left(1 + \frac{1}{T_I s} + \frac{T_D s}{\tau s + 1}\right) = k_p + \frac{K_i}{s} + \frac{K_d s}{\tau s + 1} \stackrel{?}{=}$$

Q14 Program the digital controller from Q13 into the dsPIC and run the setup. Record the results in the following table. Plot the necessary data. ($\omega_{\text{ref}} = 100$ rad/s). Sketch ω versus t and u vs. t with labels in the space adjacent to the table.

Type of experiment	t_s [s]	e_{ss} [%]	M_p [%]	$\frac{2^{\text{nd}}\text{ overshoot}}{1^{\text{st}}\text{ overshoot}}$
Practical				