EE380 (Control Systems), 2013, Lab work of Experiment 1

Student Name	Roll No.	Bench No.

Q8 Identify the system parameters K_m and τ_m using the OL step response.

Q9 For the identified model, redesign your controller using loop-shaping.

Q11 Program the lab-designed digital controller and run the setup.

Plot your results as two subplots with ω versus t in the upper subplot and u versus t in the lower subplot. Sketch this plot on this paper and show the plot and its sketch to your TA.

Q12 Fill the following table:

M_p [%]	e_{ss}	t_s [s]	Response looks like 1st order or 2nd order?

If you wish, you may also program the home-designed controller into the μC and compare its performance with that of the lab-redesigned controller. Ideally, this comparison is done by plotting the two plots of ω versus t on one subplot and the two plots of u versus t on the other subplot.

Q13 Conclusions:

1. Is the physics-based model a good match to the plant? If not, what do you think we have ignored that has lead to the difference?