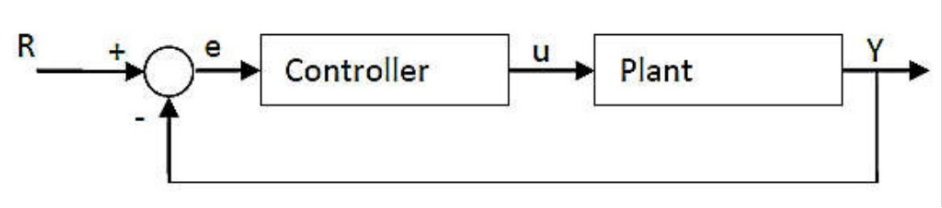
Lab Session 10

Exercise:

Question 1:

For the feedback system shown below, complete the following observation table,

PID values (K_p, K_i, K_d)		Closed loop System Response				
		Rise time	**Settling time**	**Peak time**	**Overshoot**	**Steady state error**
Increasing K_p	(200, 1, 1)					
	(300, 1, 1)					
	(400, 1, 1)					
	(500, 1, 1)					
	(600, 1, 1)					
Increasing K_i	(100, 80, 1)					
	(100, 150, 1)					
	(100, 250, 1)					
	(100, 400, 1)					
	(100, 600, 1)					
Increasing K_d	(100, 150, 10)					
	(100, 150, 50)					
	(100, 150, 150)					
	(100, 150, 300)					
	(100, 150, 500)					



$$\text{Plant} = \frac{\frac{1}{705}}{s^2 + \frac{30\,s}{705} + \frac{15}{705}}$$

$$\text{Controller} = K_p + \frac{K_i}{s} + K_d s$$

Use MATLAB script present in Lab session 10 of the manual to find the step response of the closed loop transfer function for the above mentioned plant and PID values. Use MATLAB script present in Lab session 07 of the lab manual to find the time specification of all the step responses of closed loop transfer function with above mentioned plant and PID values. Use time vector as `[0:0.001:300]` for plotting step responses.

Write the complete MATLAB script on the separate A4 sheet and attach it with this document. Complete the table present in this document and conclude the table.

Only write conclusion below this line. Use blank A4 sheets to write MATLAB script and attach it with this document.

CONCLUSION: