Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –Ist SEMESTER–EXAMINATION – JULY- 2012

Subject code: 710303 **Date: 09/07/2012**

Subject Name: PID Controler

Time: 2:30 pm – 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What is the meaning of validation in identification process? Explain two parameters model in details.	**06**
	(b)	Give the design procedure of single loop PID controller using relay feedback method.	**08**
Q.2	**(a)**	Write short note on fuzzy logic controller in details	**08**
	(b)	Explain: 1) White Noise 2) Two degree of freedom controller	**06**
		OR	
	(b)	Explain any one process control application of ratio control scheme in details.	**06**
Q.3	**(a)**	Explain dominant pole method of controller tuning .	**06**
	(b)	Give the Schematic of step response method used for tuning of PID Controller. For Open loop transfer function given below, $G(s) = \frac{1}{(S+2)}$ Find out PID Controller parameters using Z-N Tuning Rule and step response method.	**08**
		OR	
Q.3	**(a)**	Write short note on pole placement controller. Design a pole placement controller for the system represented by following matrices, to obtain desired response having $\xi = 0.4$ and $\omega_n = 6$ rad/sec. A = [-4 1;-7 0], B = [1 2] and C = [2 1].	**10**
	(b)	When can a PID controller be used?	**04**
Q.4	**(a)**	Explain limited integration method of integral anti wind up.	**06**
	(b)	Explain method of model parameters identification of oscillatory system.	**08**
		OR	
Q.4	**(a)**	Write short note on neural network control	**06**
	(b)	Explain digital PID Controller in details	**08**
Q.5	**(a)**	Write short note on cohen coon method of analytical tuning of PID Controller.	**06**
	(b)	Write short note on Model based control in details.	**08**
		OR	
Q.5	**(a)**	Explain different modifications of PID controller in details.	**08**
	(b)	Give any one practical example of feed forward control scheme?	**06**

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