Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-I Regular Examination January / February 2011

Subject code: 710303 N **Subject Name: PID Controller**

Date: 02 /02 /2011 **Time: 02.30 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)**	Give the design of a Multiloop controllers using Relay feedback Method.	**08**
	(b)	Write short note on Set point weighting which is a modifications to PID Controller.	**06**
Q.2	**(a)**	Explain the scope (future) of PID Controllers along with the challenges.	**08**
	(b)	Give the method of finding out Model for Oscillatory Systems. How to validate a model obtained from any method?	**06**
		OR	
	(b)	What is the difference between measurement noise and disturbances. How noise characteristics can be measured. ?	**06**
Q.3	**(a)**	Give the Schematic of Relay feedback method used for tuning PID Controller. For Open loop transfer function given below, $G(s) = \frac{1}{S(S+2)(S+6)}$ Find out PID Controller parameters using Z-N Tuning Rule and critical point method.	**10**
	(b)	Give the steps to make PID Controller auto-tuning using relay feedback method.	**04**
		OR	
Q.3	**(a)**	What are the differences between feed forward and feedback control? Explain the feed forward control with suitable block diagram and give one application of it.	**10**
	(b)	Give any physical application of Cascade control and explain how to choose secondary measured variable.	**04**
Q.4	**(a)**	What do you mean by load disturbances? Explain Sensitivity to measurement noise.	**08**
	(b)	Explain the bump less transfer between Manual and Automatic mode.	**06**
		OR	
Q.4	**(a)**	What do you mean by analytical tuning method for PID Controller? Explain λ (lamda) tuning method in details.	**08**
	(b)	Write Short note on internal model control.	**06**
Q.5	**(a)**	What do you mean by dominant pole design? Explain the Cohen Coon Method.	**08**
	(b)	Write short note on Ratio Control.	**06**
		OR	
Q.5	**(a)**	Explain Adaptive Control technique with suitable block diagram.	**08**
	(b)	Write short note on Rule based methods for PID Controller.	**06**

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