Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014

Subject code: 710303N **Date: 19-06-2014**

Subject Name: PID Controller

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)**	Discuss the method of moments for computing process models in detail.	**07**
	(b)	Discuss three parameter and four parameter process modelling with step response.	**07**
Q.2	**(a)**	Explain relay feedback experiment to tune the PID controller in detail.	**07**
	(b)	Explain the Ziegler-Nichols Frequency response method to tune PID controller.	**07**
		OR	
	(b)	Explain the Ziegler-Nichols step response method to tune PID controller.	**07**
Q.3	**(a)**	Describe parameter estimation method to estimate the parameters of the discrete time model.	**07**
	(b)	Discuss about interacting and non-interacting form of the PID algorithm.	**07**
		OR	
Q.3	**(a)**	Discuss about PID controller having two degree of freedom with set point weighting.	**07**
	(b)	Give explanation on Discretization of continuous time PID controller for digital control.	**07**
Q.4	**(a)**	Discuss the methods for bump less transfer between manual to automatic mode.	**07**
	(b)	Discuss about sensitivity to measurement noise and sensitivity to process characteristics.	**07**
		OR	
Q.4	**(a)**	Explain ɔ-tuning method in detail.	**07**
	(b)	Discuss about internal model controller (IMC)in detail.	**07**
Q.5	**(a)**	Discuss about gain scheduling and adaptive controller.	**07**
	(b)	Discuss about fuzzy controller in detail.	**07**
		OR	
Q.5	**(a)**	Discuss about neural network control in detail.	**07**
	(b)	Discuss about feedforward and cascade control in details.	**07**

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