Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- Vth SEMESTER–EXAMINATION – MAY/JUNE - 2012

Subject code: 151704 **Date: 07/06/2012**

Subject Name: Industrial Control Systems

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)**	Classify process variables. Define and explain each.	**07**
	(b)	Explain feedback and feed forward control in detail.	**07**
Q.2	**(a)**	Discuss concept of linearity, stability and order of a system.	**07**
	(b)	Discuss types and uses of mathematical modeling.	**07**
		OR	
	(b)	Derive mathematical model of a liquid level system without resistance element.	**07**
Q.3	**(a)**	Explain on-off controller in detail.	**07**
	(b)	Discuss proportional controller in detail.	**07**
		OR	
Q.3	**(a)**	Discuss integral windup and anti windup.	**07**
	(b)	Explain process reaction curve method of tuning.	**07**
Q.4	**(a)**	Explain on-off controller around Op-amps in detail.	**07**
	(b)	Explain electronic PID controller with its circuit.	**07**
		OR	
Q.4	**(a)**	Draw line symbols and prepare P&I representation of flow ratio controller.	**07**
Q.4	**(b)**	Explain ratio control in detail.	**07**
Q.5	**(a)**	Explain benefits of DDC.	**07**
	(b)	Discuss control valve characteristics.	**07**
		OR	
Q.5	**(a)**	Show and discuss basic parts of PLC.	**07**
	(b)	Discuss hierarchical DCS.	**07**

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