Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 713002N
Subject Name: Adv. Instrumentation & Process Control

Date: 01 /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)**	Explain distributed computer control system with a block-diagram and discuss its advantages and disadvantages.	**07**
	(b)	Write a short note on principle and working of Gel Permeation Chromatography.	**07**
Q.2	**(a)**	Explain in detail requirements to be considered by design engineer for safe process control.	**07**
	(b)	Define transducer and explain the advantages and disadvantages of electrical transducer.	**07**
		OR	
	(b)	What is the aim of Plant-automation ? Explain benefits of plant automation.	**07**
Q.3	**(a)**	Describe with a diagram, the computer control of a heat exchanger.	**07**
	(b)	Discuss Non-Interacting multi-capacity control system.	**07**
		OR	
Q.3	**(a)**	Define z-transform and determine z-transform of $e^{(-t/\tau)}$.	**07**
	(b)	Explain classification of instrumentation.	**07**
Q.4	**(a)**	Show that when unit step change is given to a system-single tank with constant flow outlet, its response is a ramp function.	**07**
	(b)	Draw the bode-plot for the system having transfer function $G(s) = (5S+1)^2$.	**07**
		OR	
Q.4	**(a)**	Draw a root-locus diagram for a system having transfer function -------- $K/(S+2)^3$.	**07**
	(b)	Explain rules for block-diagram reduction.	**07**
Q.5	**(a)**	Short note on IR spectroscopy.	**07**
	(b)	Short note on UV spectroscopy.	**07**
		OR	
Q.5	**(a)**	Explain in detail servo and regulator control system.	**07**
	(b)	Short note on Micro controllers.	**07**

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