Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 711603N **Date: 03-01-2014**

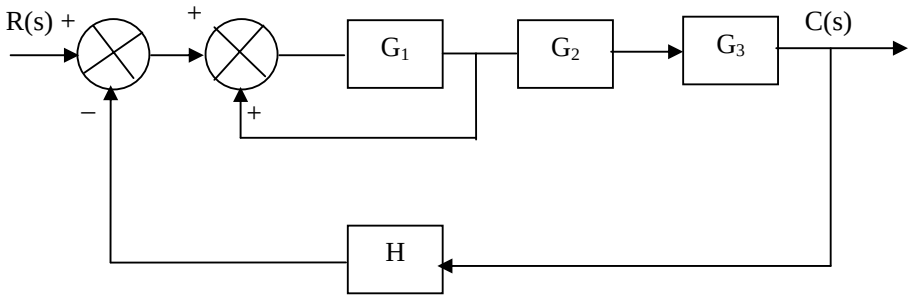
Subject Name: COMPUTERIZED PROCESS CONTROL

Time: 10.30 am – 01.00 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)**	**Define transducer & explain the advantages and disadvantages of Electrical Transducer.**	**07**
	(b)	**Discuss & Compare the Non- interacting v/s Interacting Two tank multi capacity control System.**	**07**
Q.2	**(a)**	**Explain the aims of Plant automation & discuss the benefits of Plant automation.**	**07**
	(b)	**Describe with a diagram, the Temperature Control system for Plastic Injection Molding process.**	**07**
		OR	
	(b)	**Explain with a block diagram, the computer control of a Fed-batch Fermentor.**	**07**
Q.3	**(a)**	**Write a note about (i) Digital to Analog Convertor (ii) Microcontrollers.**	**07**
	(b)	**Explain & discuss the Token Bus Communication Topology with its advantages & disadvantages.**	**07**
		OR	
Q.3	**(a)**	**Explain Distributed Computer Control System with a block diagram and Discuss its advantages & disadvantages.**	**07**
	(b)	**Discuss the process control requirements of Computers.**	**07**
Q.4	**(a)**	**Determine the transfer function C(s) / R(s) for the system shown in figure below:**	**07**



	(b)	**Explain DDC. Discuss the back-up concept & Dual Computer System for DDC with diagram.**	**07**
		OR	
Q.4	**(a)**	**List out the factors which have contributed to the development of modern automation technology & Write about the developments in intelligent semiconductor sensors & fiber-optic sensors.**	**07**
		-----P.T.O.----	
	(b)	**Discuss about the Working Principle of The Pirani Vacuum gauge.**	**07**

Q.5 **Explain the Root-locus method in detail. Sketch the Root locus diagram for the system having open-loop transfer function** **14**

$$G(s) = \frac{0.5Kc(4s+1)}{s(s+1)(0.5s+1)}$$

Indicate all poles, zero, center of gravity, breakaway point direction where loci travels.

OR

Q.5 **(a)** **Describe Principle, Working & Mechanism of Proportional-Derivative controller.** **07**

(b) **Explain & Discuss about Input signal conditioning.** **07**

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