Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code:711603N

Subject Name: Computerised Process Control

Date: 02 /02 /2011 **Time: 02.30 pm – 05.00 pm**

Total Marks: 70

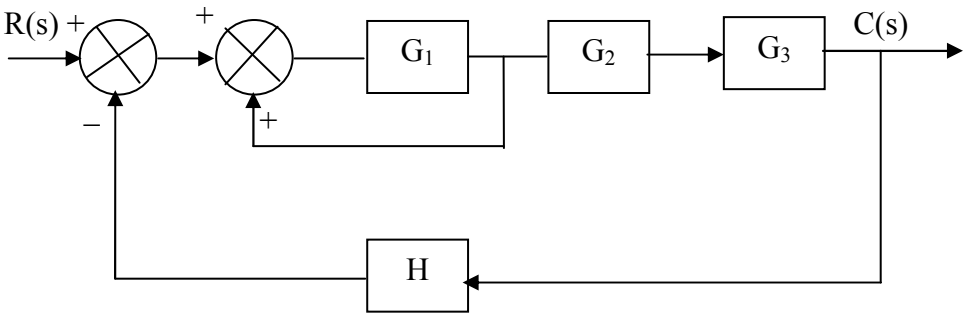
Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 Answer the following.

(A) Explain DDC and Discuss the back-up concept of DDC with diagram. 07

(B) Determine the overall transfer function C(s) / R(s) for the system shown in figure. 07



Q.2(A) Explain & Discuss with a block diagram, The Computer control of a Fed-batch Fermentor. 07

(B) Describe Instruments for control of flow and temperature. 07

OR

(B) Explain and discuss The Digital to Analog converter and Analog to Digital converter 07

Q.3(A) What is industrial automation? List all and explain any two factors, which have contributed to the development of modern automation technology. 07

(B) Explain and discuss the function Limit-value check and alarming. 07

OR

Q.3(A) Explain the basic concepts of measurement and Discuss the generalized measurement system. 07

(B) Explain & discuss Micro controllers. 07

Q.4(A) Explain Distributed Computer Control system with a block diagram & discuss the advantages and disadvantages of DCS. 07

(B) Explain & discuss the communication in DCS system and describe in detail CSMA/CD Protocol. 07

OR

Q.4(A) A proportional controller having K_c = 6 is used to control two first order non-interacting system having time constants 1.0 and 0.6. A unit step change introduced into the set point of the control system. Determine the maximum value of the response and the offset. 07

(B) Explain & Discuss Mechanism of Proportional-Integral controller 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 with a diagram, the Temperature Control system for Plastic Injection Molding process. 07

(B) Discuss in detail the Comparison of Pneumatic and Electronic controllers. 07

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