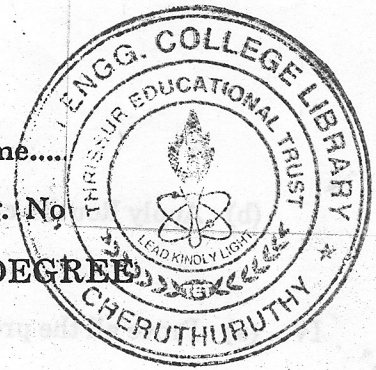


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(Pages : 2)

Name.....

Reg. No.



SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2011

EC 04 603—CONTROL SYSTEMS

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

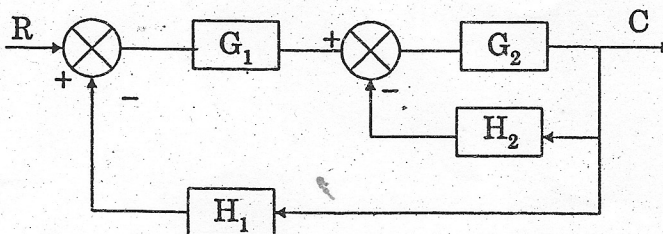
- I. (a) State and explain the properties of Laplace transforms.
(b) Explain the advantages and applications of signal flow graphs.
(c) Explain the performance of feedback control systems.
(d) Explain the concept of stability with an example.
(e) Explain the properties of z -transform Prove any two.
(f) Explain the cyclic and multi-rate sampling.
(g) Define and explain :
(i) State Variables.
(ii) State vector.
(iii) State space.
(h) Explain the Laplace transform approach to the solution of state equations.

(8 × 5 = 40 marks)

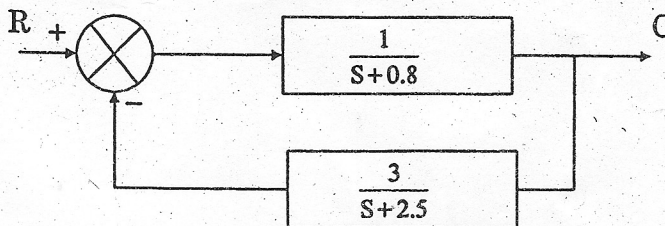
- II. (a) Derive Mason's gain formula. Explain the steps.

Or

- (b) Find $\frac{C(s)}{R(s)}$ for the system shown in figure :



- III. (a) Determine the type and the static error coefficients of the system given in figure :



Turn over

(b) Apply Routh's criterion to test the stability of the system described by :

$$s^5 + 0.5s^4 + 3s^3 + 1.5s^2 + 0.5s + 0.5 = 0.$$

IV. (a) Prove all the properties of z-transform.

Or

(b) Write short notes on :

(i) Bilinear transformation.

(7 marks)

(ii) Sample and hold.

(8 marks)

V. (a) Explain the state space representation of Discrete time systems.

Or

(b) Write technical notes on :

(i) State transition matrix.

(7 marks)

(ii) State space models.

(8 marks)

[4 × 15 = 60 marks]

