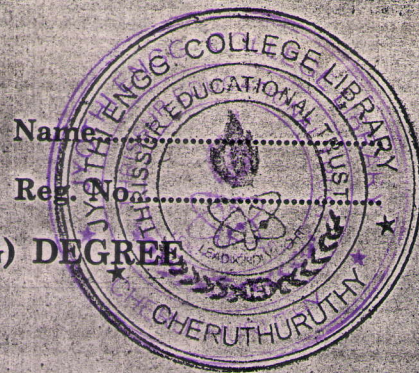


C 20555



Name:

Reg. No:

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2006**

EC 2K 601—CONTROL SYSTEMS

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

- I. (a) Differentiate open loop and closed loop systems.
(b) Explain the concept of feedback.
(c) State the advantages of Routh-Hurwitz criterion.
(d) Explain the theory of Nyquist criterion.
(e) Explain the steps of mapping between S plane Z plane.
(f) Define multi-rate sampling. Explain its significance.
(g) Explain the concept of state variables.
(h) Enumerate the properties of state transition matrix.

(8 × 5 = 40 marks)

- II. (a) (i) State and derive the properties of Laplace transform.
(ii) Derive Mason's Gain formula.

Or

- (b) (i) Explain the advantages of block diagram reduction technique with an example.
(ii) Define and explain 'Order and type of filter'.

- III. (a) (i) Differentiate continuous time system from discrete time system.
(ii) What is steady state error? Obtain an expression for it.

Or

- (b) (i) Explain the steps to construct root locus.
(ii) Explain in detail the theory of lag-lead compensators.

- IV. (a) State and derive the properties of Z transform.

Or

- (b) (i) What is pulse transfer function? Explain. Give an example.
(ii) Give an account on stability analysis using Routh-Hurwitz criterion.

- V. (a) (i) What is diagonalization? Explain.
(ii) What are state space models? Explain.

Or

- (b) (i) Derive the properties of state transition matrix.
(ii) Obtain the relation between Poles and Eigenvalues.

(4 × 15 = 60 marks)