

Roll No.

--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE)(ECE) (Sem.-4)
LINEAR CONTROL SYSTEMS

Subject Code : IC-204

M.Code : 57021

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**Q1. Answer briefly :**

- a) What is the characteristic of open loop control system?
- b) What is the steady state error?
- c) What are time variant and time invariant systems?
- d) What is gain margin?
- e) What is the information we get from root locus?
- f) What is signal flow graph?
- g) What is stability?
- h) What is significance of routh hurwitz criterion?
- i) What do you understand from closed loop system?
- j) Differentiate real and imaginary roots.

SECTION-B

- Q2. What are the various types of analogous systems? Discuss force voltage analogy and force current analogy.
- Q3. What are the steps to apply routh criterion? Solve using routh hurwitz criterion $s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16s + 16 = 0$

Q4. What are steps involved to solve problem by root locus?

Plot the root locus pattern for a system whose transfer function is given below :

$$G(s) = K(s+1)/s(s+2)(s^2+2s+5)$$

Q5. What is bode plot? What is the relation between time and frequency response of second order system?

Q6. What are AC and DC techogenerators? Explain.

SECTION-C

Q7. What is the necessity of compensation? How series and parallel compensators work? Explain in detail with suitable examples.

Q8. What are control components? What is the need of control components? What are error detectors? Explain the functioning of potentiometers and synchro.

Q9. Write in detail about the following :

- a) State variable modeling.
- b) Nyquist criterion.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.