

Government College Of Engineering, Aurangabad

(An Autonomous Institute Of Government of Maharashtra)

BE EEP(Old)/ BE EEP(Old)PT Examination

End Semester Examination

16 NOV 2016

EE402: Control Systems-II

Time: Three Hours

Max.Marks:60

"Verify the course code and check whether you have got the correct question paper"

N.B:-

1. All questions are compulsory
2. Each question carries equal marks.
3. Assume suitable data if necessary & state it clearly
4. Use of non programmable calculator is allowed

Q.1.Solve any Two

A. Obtain the state model of RLC series circuit.

B. Compare transfer function approach and state space techniques?

C. What are different methods of computing state transition matrix? Explain Laplace transform method.

Q.2.Solve any Two

A) Obtain the state model of system whose transfer function is

$$T(s) = \frac{5S^2 + 6S + 8}{S^3 + 3S^2 + 7S + 9} \quad \text{by direct decomposition method.}$$

B) Reduce the Matrix A to Diagonal matrix.

$$A = \begin{bmatrix} 0 & 1 & -1 \\ -6 & -11 & 6 \\ -6 & -11 & 5 \end{bmatrix}$$

C) Explain controllability and observability of the system?

Q.3.Solve any Two

A) Explain the various common nonlinearities?

B) Explain Lag Compensator?

C) Explain the steps involved in placement of closed loop poles by state feedback method?

Q.4. Solve any Two

A) For a system with state model matrices.

$$A = \begin{bmatrix} -1 & 0 & 1 \\ 1 & -2 & 0 \\ 0 & 0 & 3 \end{bmatrix}; B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}; C = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}^T$$

Obtain the system transfer function.

B) Explain P,PI,PID control mode with their characteristics.

C) Write a note on Fuzzy logic controller. Explain its application.

Q.5. Write short note on any Two

A) Jump Resonance

B) Limit Cycle

C) Pole-zero mapping