

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (Sem.-3)

NETWORK THEORY

Subject Code : BTEC-304-18

M.Code : 76447

Date of Examination: 15-12-2023

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

1. Write briefly :

- a) What are poles and zeros?
- b) State the difference between a mesh and a loop.
- c) Give the characteristic equations for h-parameters.
- d) Explain briefly quality factor for transient state analysis.
- e) State reciprocity theorem.
- f) State the limitations of ohm's law.
- g) What is time constant for RL series circuit?
- h) What is open circuit and short circuit network?
- i) If 3A electric current flows for a period of 5 minutes, then what amount of charge will get transferred?
- j) State time shift property in Laplace transform.

SECTION-B

2. A linear system is described by the differential equation

$$\frac{d^2 y}{dt^2} + 2 + 5 \frac{dy}{dt} + 6y = 2 \frac{du}{dt + 1}. \text{ Find the system poles and zeros.}$$

3. State the symmetry and reciprocity condition in T and Pi two port networks.
4. Discuss the applicability of KCL and KVL.
5. Explain the concept of complex frequency and steady state analysis of the network.
6. Discuss Foster's forms and their significance.

SECTION-C

7. Derive and formulate Z parameters in a two-port network.
8. What is Thevenin's theorem and find the equivalent Thevenin's circuit.
9. Write a short note on passband and stopband filters.

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.