

B.Tech III Semester Regular/Supplementary Examinations, February 2021

Network Analysis

(Electronics and Communication Engineering)

Maximum Marks: 70

Date: 01.03.2021 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks(10x2M=20 Marks)

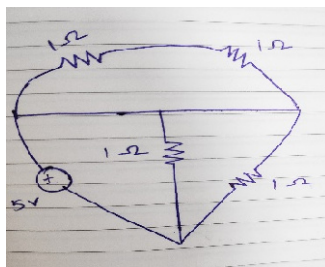
- 1 Define tree, co-tree.
- 2 Explain incident matrix with an example
- 3 Define damping ratio.
- 4 Define time constant .
- 5 Define average and rms values.
- 6 Define Q-factor.
- 7 What is characteristics impedance
- 8 Explain the symmetry condition for Z and Y parameters.
- 9 Define propagation constant.
- 10 What are the different types of filters.

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 a) Explain about equivalent T for Magnetically coupled circuits,
b) Explain about dot convention. 10M
- OR
- 12 Define tie set matrix, cut set matrix and find the tie set matrix and cutest matrix for the circuit shown 10M



- 13 a) Explain about damping factor with over damped, under damped, critically damped cases. 10M
- OR
- 14 a) Derive the expression for voltage $v(t)$ in source free RL circuit
b) Derive the expression for current $i(t)$ in source free RC circuit 10M

- 15 In figure the switch is closed. Find the time when the current in the circuitry reaches to 500 mA 10M

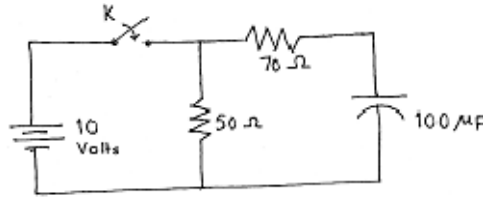


Fig. RC circuit

OR

- 16 Find the expression for the current ($i(t)$), voltage across resistor (V_R) and voltage across inductor (V_L) using Laplace transform. 10M

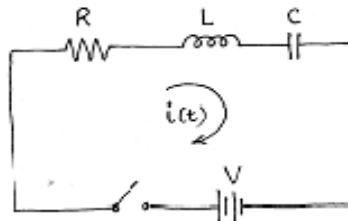


Fig. RLC circuit

- 17 Determine Y parameters in terms of Z parameters and Z parameters in terms of Y parameters 10M

OR

- 18 a) Derive the condition for Reciprocity and symmetry in a two port ABCD - parameter representation. 10M
b) The Z-parameters of a circuit are given by

$$Z_{11} = 3; Z_{12} = 3; Z_{21} = 4; Z_{22} = 4$$

Obtain the transmission parameters.

- 19 Explain about m-derived filters. 10M

OR

- 20 Design a Constant K-type low pass filter 10M