

Code No: 153BH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year I Semester Examinations, September/ October - 2023

NETWORK ANALYSIS AND TRANSMISSION LINES

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) Define the terms Flux density and Reluctance. [2]
- b) List the properties of a Tree in a graph. [3]
- c) Distinguish between a Steady state and Transient response. [2]
- d) Draw and explain the DC response of an R – C Circuit by giving it steady state part and transient part. [3]
- e) How do you define a Two Port network? [2]
- f) Define image and interactive impedance. [3]
- g) Define the term Characteristic impedance. [2]
- h) What is line distortion and explain about frequency distortion? [3]
- i) Explain the term O.C and S.C impedance. [2]
- j) What is smith chart? Give its applications. [3]

PART – B

(50 Marks)

2. Distinguish between
 - a) Planar and Non- planar graphs
 - b) Tree and Co-Tree
 - c) Twigs and Links.

OR

- 3.a) Obtain an expression for Coefficient of Coupling and its significance. [10]
- b) For the following circuit, find the voltage V_2 (figure 1). [4+6]

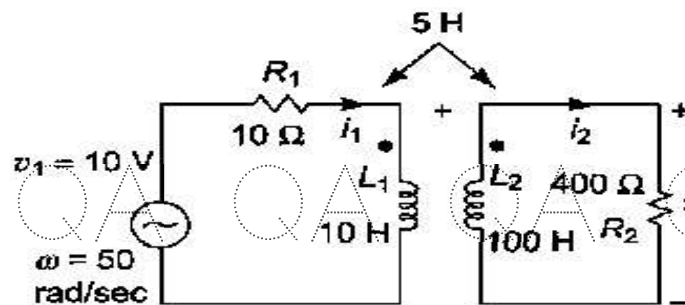


Figure 1

QA QA QA QA QA QA QA QA QA

4. The circuit shown in the following consists of resistance, inductance and capacitance in series with a 100 V constant source when the switch is closed at $t = 0$, find the current transient (figure 2). [10]

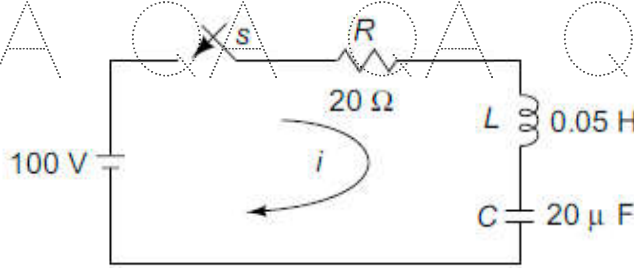


Figure 2
OR

5. For the following circuit, determine the complete solution for the current, when Switch S is closed at $t = 0$ (figure 3). [10]

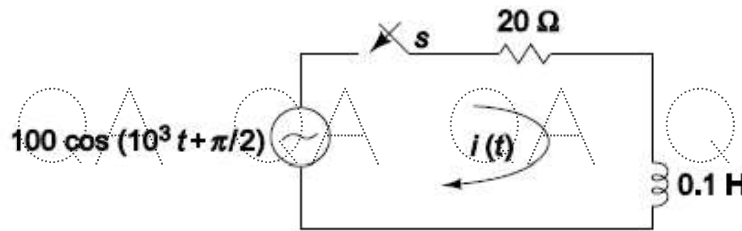


Figure 3

6. Find the Y parameters for the following network (figure 4). [10]

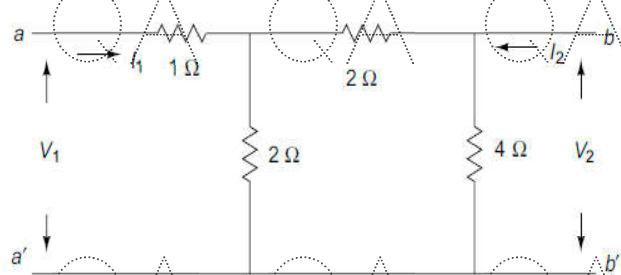


Figure 4
OR

- 7.a) List and explain the necessary conditions for Driving Point function. [5+5]
b) Explain different steps involved in the design of attenuators.

8. Derive the input impedance and transfer impedance of Transmission line. [10]

OR

9. Explain the various types of Loading of transmission lines. [10]

10. Discuss $\lambda/4$, $\lambda/2$ and $\lambda/8$ lines. [10]

OR

11. Explain the following terms with respect to transmission lines.

- a) Efficiency of transmission line b) losses due to impedance mismatch
c) Attenuation loss d) reflection loss e) Insertion loss. [10]