Dec 2019

Exam.Code:0933
Sub. Code: 6973

1129

B.E. (Electrical and Electronics Engineering)
Third Semester
EE-305: Network Analysis and Synthesis

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit. Missing data (if any) can be appropriately assumed.

x-x-x

Q1. Explain briefly

A) State the superposition theorem? Also write its limitations. (2)

B) Differentiate between Planar and non planar graph with suitable example. (2)

C) Write the generalized equations of two port network to find the T parameters. (2)

D) Determine current transfer ratio $I_2(s)/ I_1(s)$ for the network shown in fig. 1. (2)

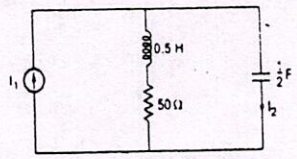

Fig. 1

E) Write the necessary conditions to a polynomial to be Hurwitz. (2)

Part A

Q2. A) Determine the voltages V_1 and V_2 in fig. 2. (5)

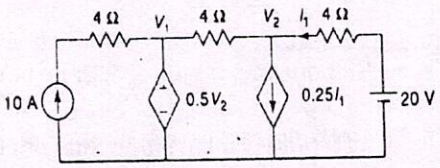

Fig.2

B) A star connected load comprising two resistors and a pure inductor is connected to a symmetrical three phase supply voltage. If the numerical impedance of all branches is the same, find the voltage across each branch as a percentage of the line voltage. (5)

Q3. A) For the network shown in fig. 3, assume elements between BC and BE as links, obtain f-cutest matrix. (3)

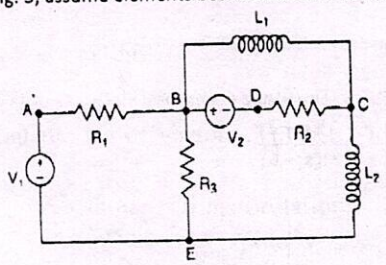

Fig. 3

B) Obtain the incidence matrix, the node admittance matrix and the matrix node equation for the network shown in fig.4. (7)

P.T.O.

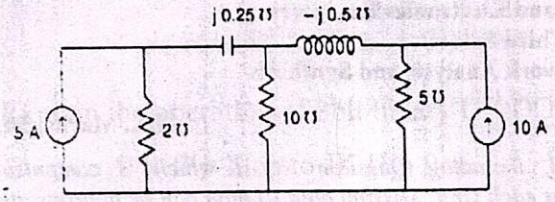

Fig. 4

Q4. A) The network of the fig. 5 is of the type used for the "Notch filter". For the element values given determine the y parameters. (5)

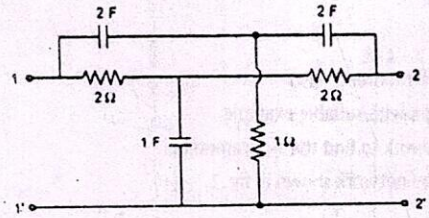

Fig.5

B) Derive the condition for the two port network to be symmetrical in terms of the Z parameters. (5)

Part B

Q5. A) The network shown in fig. 3 is in the steady state with switch K open. At t=0, the switch is closed. Find the expression for $V_2(t)$ for t>0. (5)

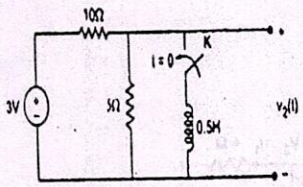

Fig. 6

B) Write the restrictions on poles and zeros for transfer function and driving point function. (5)

Q6. A) For the given function, draw pole-zero plot and hence obtain time domain response of voltage. (5)

$$V(s) = \frac{5(s+5)}{(s+2)(s+7)}$$

B) Use partial fractional expansion to determine the inverse Laplace transform of (5)

$$F(s) = \frac{5s+40}{s(s^2+12s+27)}$$

Q7. A) Write all the properties of the LC driving point immitance function. (5)

B) Synthesize the function in R-L or R-C network using Cauer form –I and Cauer form –II. (5)

$$F(s) = \frac{2(s+1)(s+3)}{(s+2)(s+6)}$$

x-x-x