

1128
B. Engg. (Electrical & Electronics Engineering)
3rd Semester

EE-305: Network Analysis and Synthesis

Time allowed: 3 Hours

Max. Marks: 50

Note: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part.

x-x-x

1. (a) Write the limitations of superposition theorem and thevenin theorem.
- (b) Write the statement of Sturm's test for PR function.
- (c) Write y parameters of 2-port networks in terms of g parameters.
- (d) Describe super node and super mesh of an electric network.
- (e) What are the limitations of R-II criterion to find out stability?

(5*2)

Part - A

2. Using loop current analysis, find the current in all branches of the network of Figure 1. Also, find the power delivered by 5A current source. All resistances are in Ω .

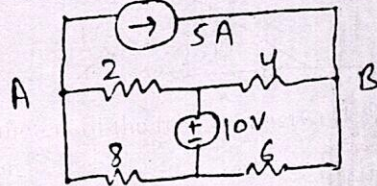


Figure 1.

(10)

3. For the network shown in Figure 2, draw oriented graph and obtain tie-set schedule considering J_1, J_2, J_3 as loop currents. Calculate all branch currents.

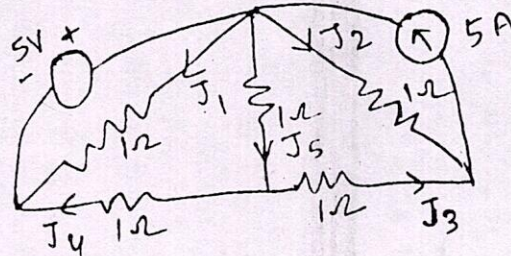


Figure 2

(10)

4. (a) Find the admittance parameters for the symmetrical lattice network of Figure 3.

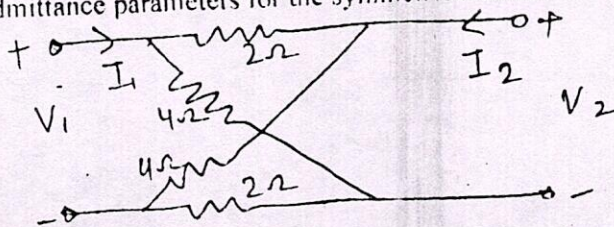


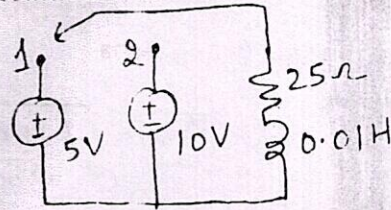
Figure 3 (5)

- (b) Find the z-parameters of the resultant network, when two 2-port networks are connected in series-parallel combination.

(5)

Part-B

5. In given RL circuit, the switch is in position 1 long enough to establish steady state condition and a switch is moved to position 2. Find the resultant current $i(t)$.



(10)

6. (a) Using R-H criterion, find range of K stability.

$$G(s) = \frac{K}{(s^2 + 6s + 25)(s+2)(s+4)}$$

(7)

(b) Write the properties and necessary conditions of driving point function.

(3)

7. Determine all the Foster forms for the following network function:

$$Z(s) = \frac{4(s^2 + 1)(s^2 + 9)}{s(s^2 + 4)}$$

(10)

x-x-x