

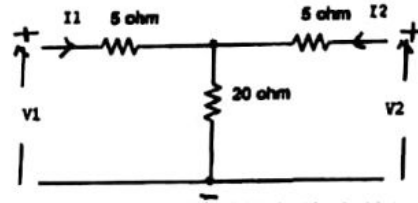
[Time: 3 Hours]

[Marks:80]

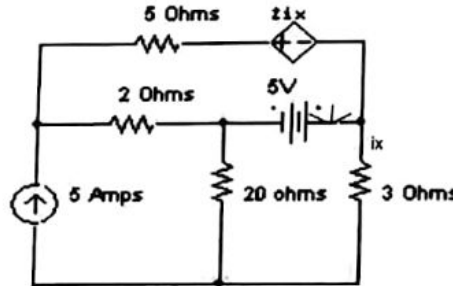
Please check whether you have got the right question paper.

- N.B:
1. Question one is compulsory.
 2. Answer any three questions from the remaining five.
 3. Assume suitable data if required.

and y parameters.



and the current through 5Ω resistor

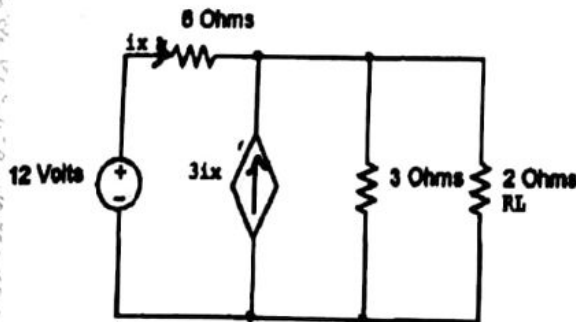


is it a Positive Real function? What are the properties of PR function?

Realize the following function in Cauer-I and Cauer-II forms

$$S = \frac{S(S+3)}{(S+1)}$$

Find the current through RL, in the circuit given below using Norton's theorem and also find power dissipated in RL.



Check whether the following functions are Hurwitz

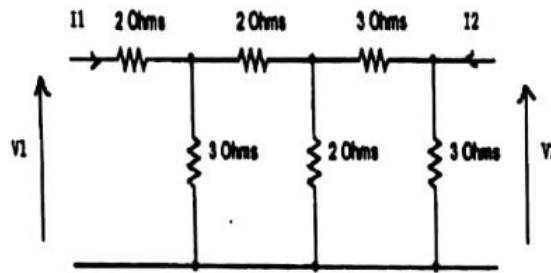
$$P(s) = S^4 + 6S^3 + 10S^2 + 18S + 36$$

$$P(s) = S^6 + 2S^5 + 5S^4 + 8S^3 + 8S^2 + 8S + 1$$

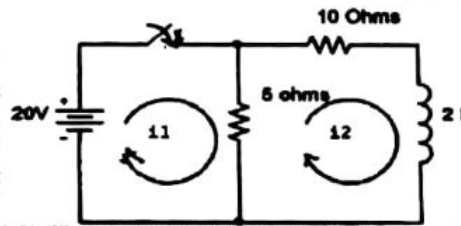
Draw the graph of the network whose incidence matrix is given below.

$$\begin{bmatrix} 1 & 0 & 1 & 0 & 0 & 0 & 0 & -1 \\ 0 & -1 & 0 & -1 & 0 & -1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & -1 & 0 & -1 & 0 & 1 & 0 \end{bmatrix}$$

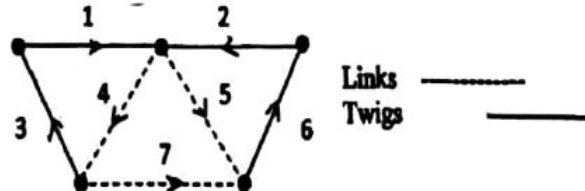
3. a) Find the overall ABCD parameters of the following network, by dividing the network into two more sections.



- b) State and prove final value theorem.
 c) Test whether the following function is Positive Real
 $F(S) = (2S^2 + 2S + 1) / (S^3 + 2S^2 + S + 2)$
4. a) Synthesize the following function in Foster-I and Foster-II forms
 $Z(S) = 4(S + 2)(S + 7) / S(S + 4)$
 b) Find h parameters in terms of z parameters
 c) In the following network the switch is closed at $t = 0$, find $i_1(0^+)$, $di_1(0^+) / dt$, $d^2i_1(0^+) / dt^2$, $i_2(0^+)$, $di_2(0^+) / dt$



5. a) Obtain the tie-set and f-cutset matrix for the graph given below.



- b) Find the condition for symmetry and reciprocity of a 2 port network
 c) Find h for the following network

