

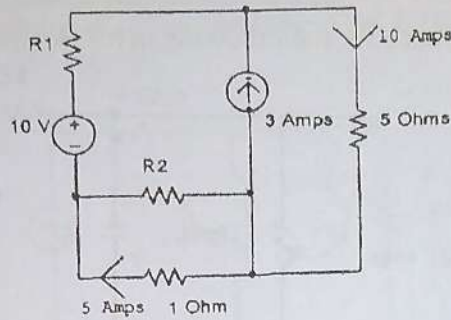
Please check whether you have got the right question paper.

11 DEC 2018

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

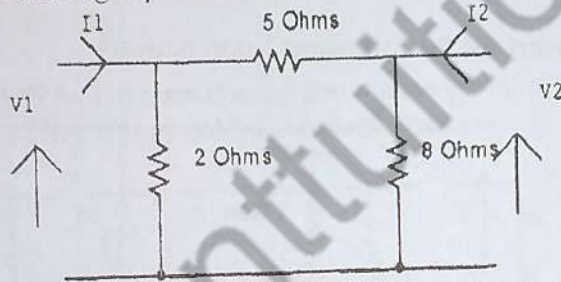
Answer all the questions

a) Find R_1 and R_2 in the following circuit.



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b) Find h parameters for the following 2-port network.



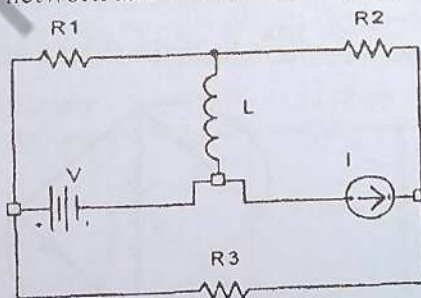
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c) The poles of a driving point impedance function are at 0, -5, and zero at -2, find the function if $Z(-3) = 1/6$ and synthesize the same in cauer-I form.

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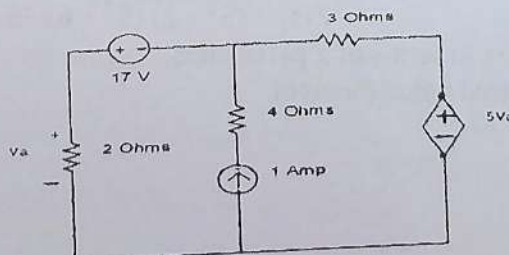
d) Draw the graph of the following network and obtain incidence matrix.

05

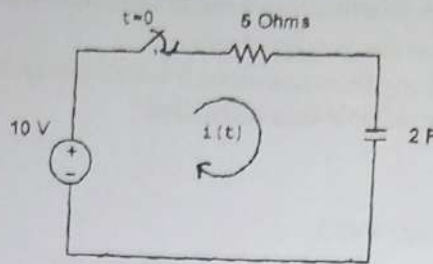


2. a) For the circuit shown below, find the current through 3 ohms resistor, using superposition theorem.

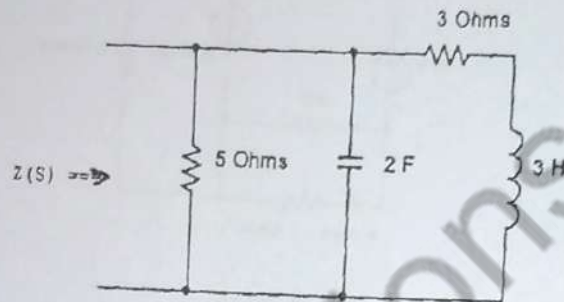
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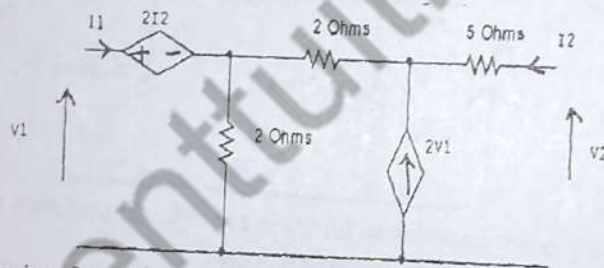
- b) In the following series RC circuit the switch is closed at $t=0$, find the expression for the current through the capacitor and sketch $i(t)$ versus t .



- c) Find the driving point impedance for the following network.



3. a) Find the ABCD parameters for the following 2-port network

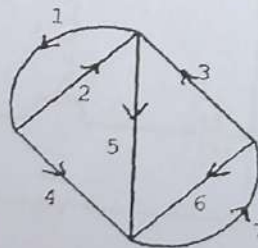


- b) Check whether the following functions are Hurwitz

i) $F(S) = S^3 + 4S^2 + 2S$

ii) $F(S) = S^5 + 2S^4 + 5S^3 + 10S^2 + 4S + 8$

- c) The graph of a network is given below. Obtain the tieset matrix.

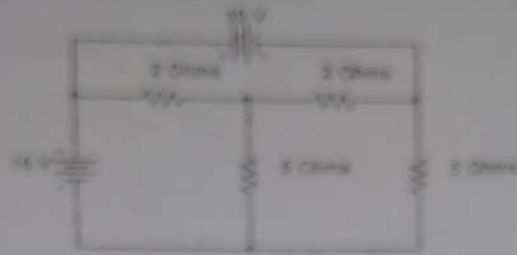


4. a) Synthesize the following driving point impedance function in Cauer-I and Foster-I forms.
 $Z(s) = (S^2 + 2)(S^2 + 6)/3S(S^2 + 5)$

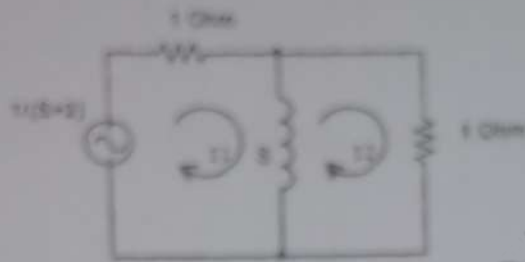
- b) Obtain h parameters in terms of z parameters.

- c) State and prove initial value theorem.

- a) For the following network obtain the KVL equilibrium equations in matrix form using the concept of graph theory and hence find the loop currents. 10

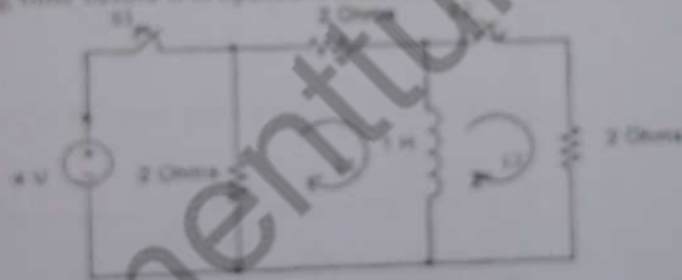


- b) Find $I_2(s)$ for the following transformed circuit and hence find $i_2(t)$ using inverse Laplace Transform. 10



- c) Test whether the following function is a Positive Real function. 05
 $F(s) = (s^3 + 14s^2 + 45) / (s^3 + 7s)$

- a) In the circuit given below, the switch S_1 is opened and the switch S_2 is closed at $t=0$. The switch S_2 was closed for a long time before it is opened. Find the current $i(t)$. 10



- b) For the following ladder network find V_2 / V_1 , I_1 / V_1 and V_2 / I_1 . 10

