

(3 Hours)

[ Total Marks : 80

- N. B. : (1) Question 1 is compulsory.  
 (2) Solve any three questions from remaining five questions.  
 (3) Figures to the right indicate full marks.  
 (4) Assume suitable data if necessary.

1. Attempt the following

- (a) Find the condition of symmetry for Z parameters.  
 (b) What is network synthesis. Construct the circuit for

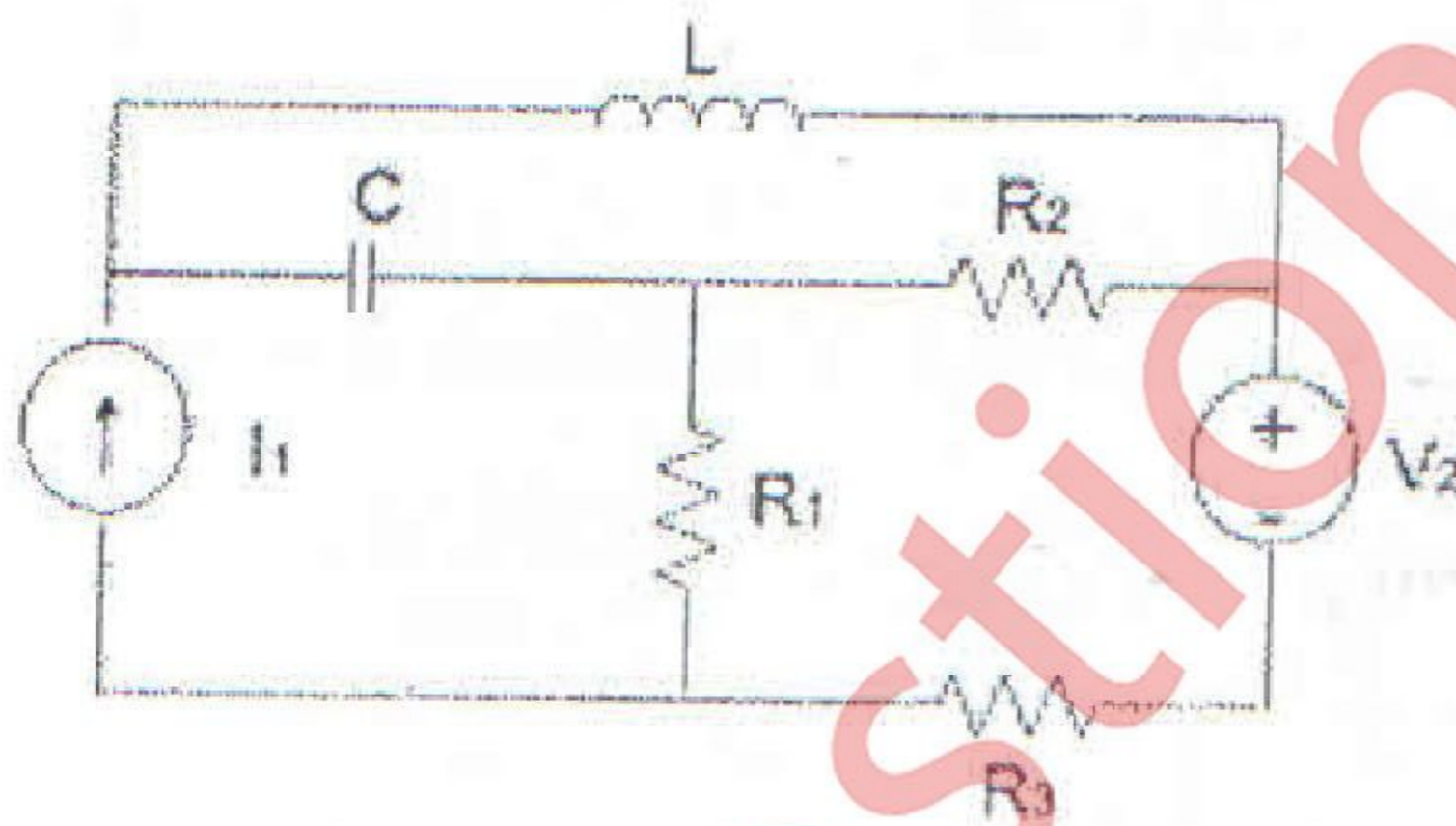
$$Z(s) = 4s + \frac{9}{s} + \frac{15s}{s^2 + 4}$$

- (c) Derive the s- domain equivalent for inductor with initial current  $I_0$  and capacitor with initial voltage  $V_0$ .  
 (d) Express Y parameters of two port network in terms of two port currents and voltages.

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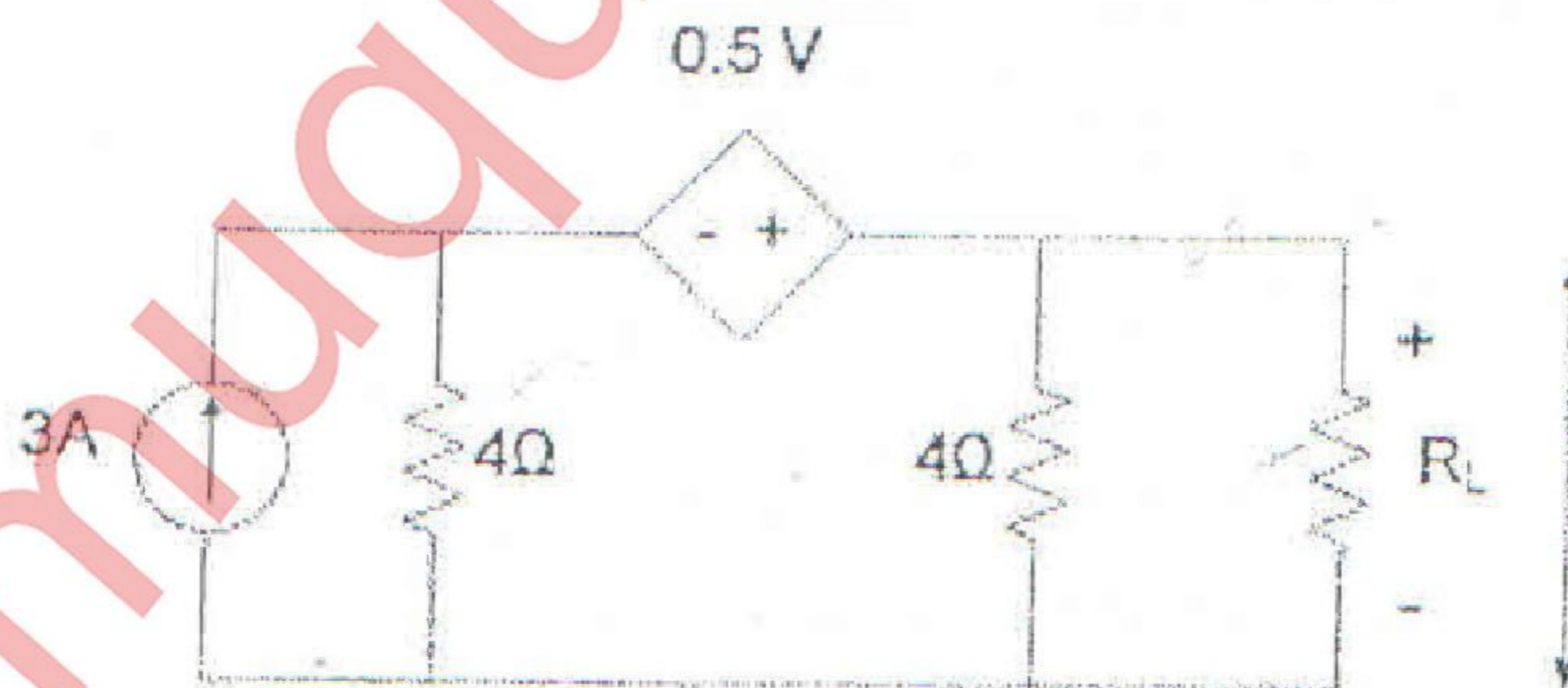
2. (a) For the given network draw an oriented graph and write f-cutset and f-tieset matrix.

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- (b) What will be the value of  $R_L$  to get maximum power delivered to it. What is value of this power.

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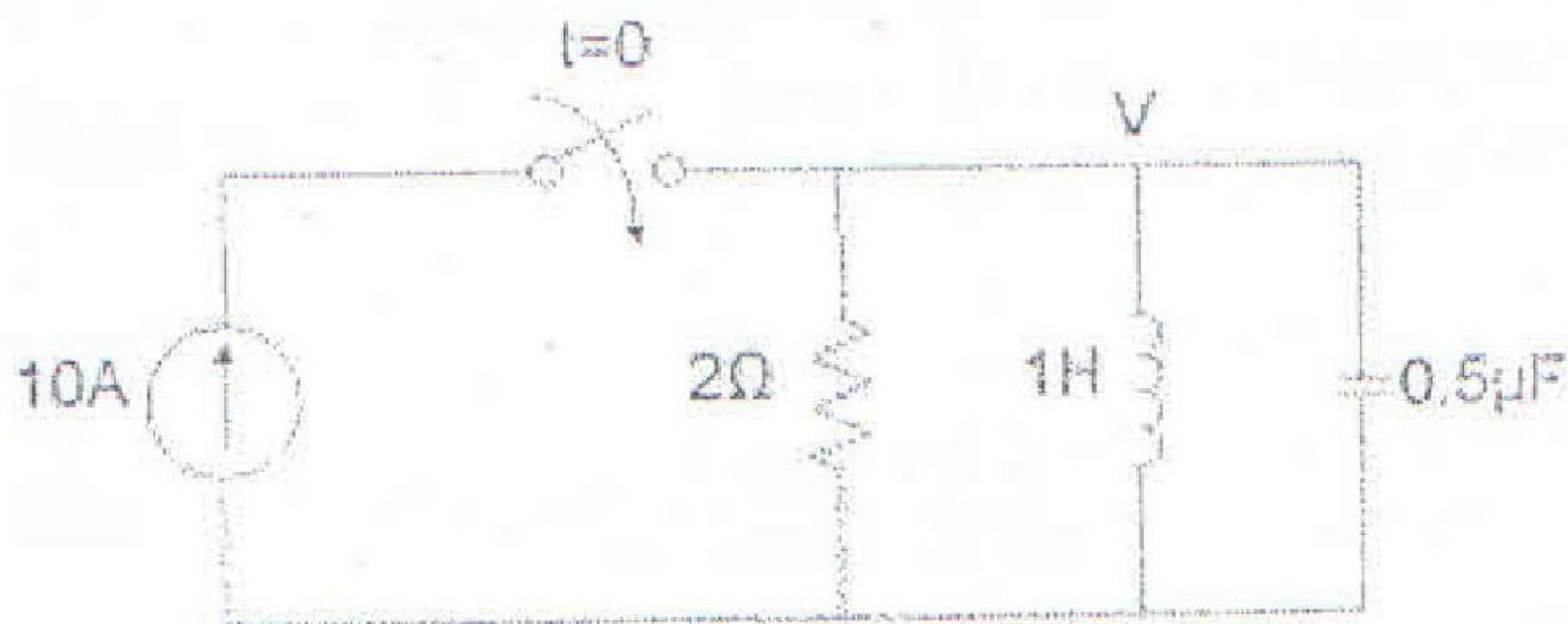


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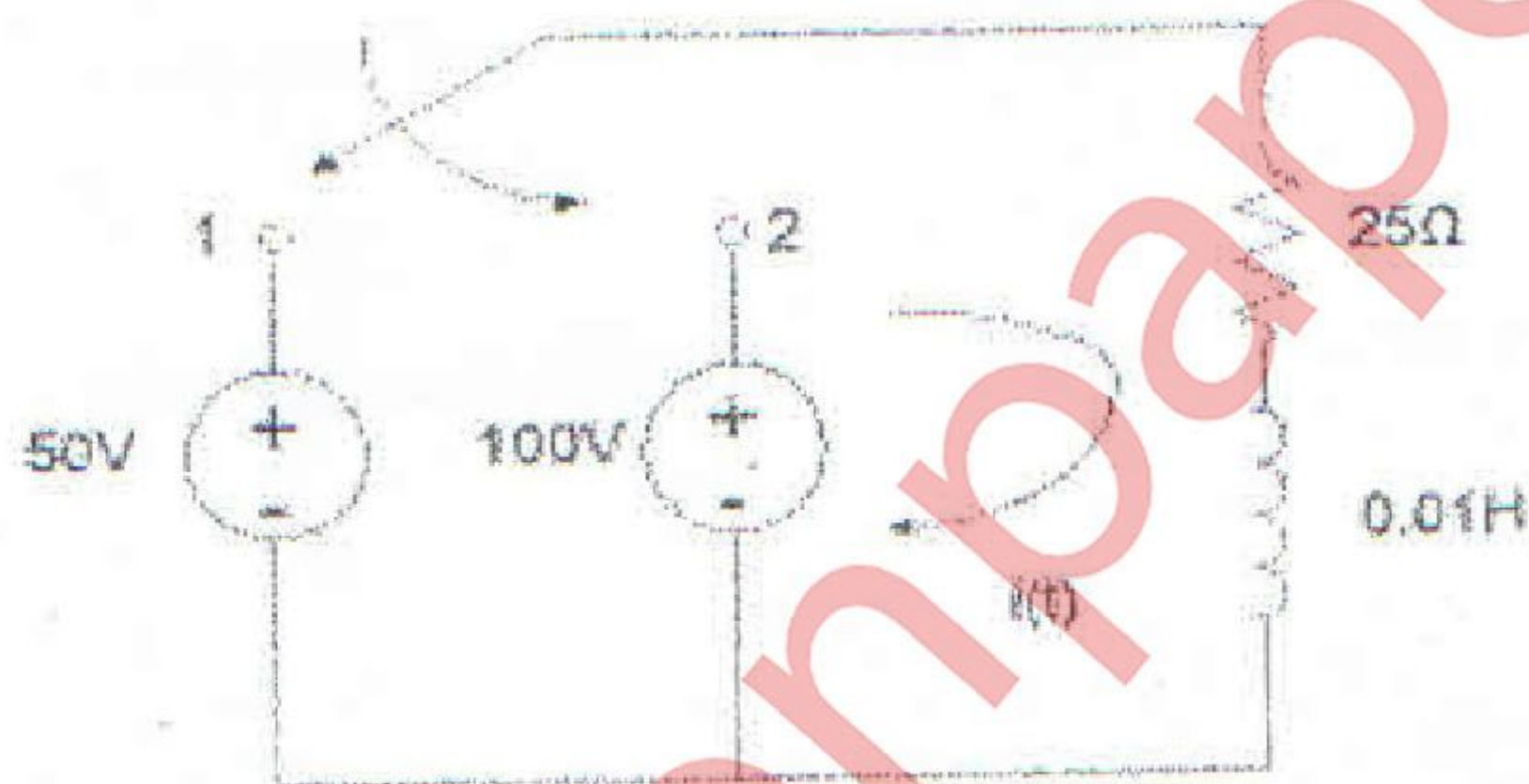
SE Electrical 2<sup>III</sup> eBSGS QP Code : 542100 6.6.17

3. (a) For the network shown in figure, switch is closed at  $t=0$ , determine 10

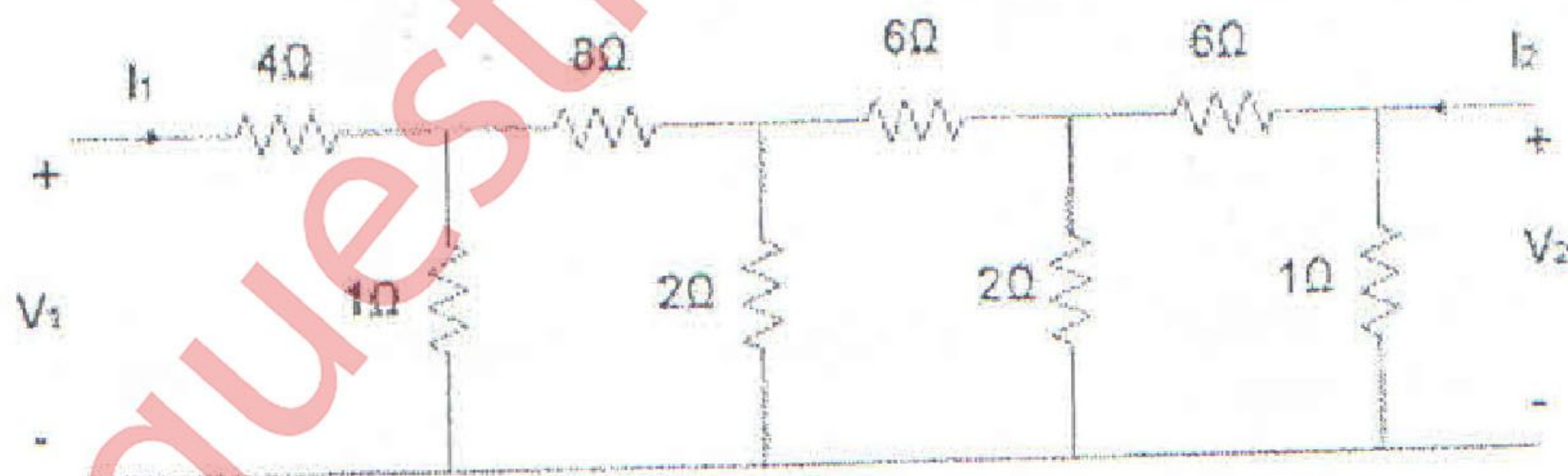
$$v, \frac{dv}{dt}, \frac{d^2v}{dt^2} \text{ at } t = 0^+$$



(b) In the RL circuit shown, switch is in position 1 long enough to establish steady state condition. At  $t=0$ , switch is changed to position 2. Find  $i(t)$  10

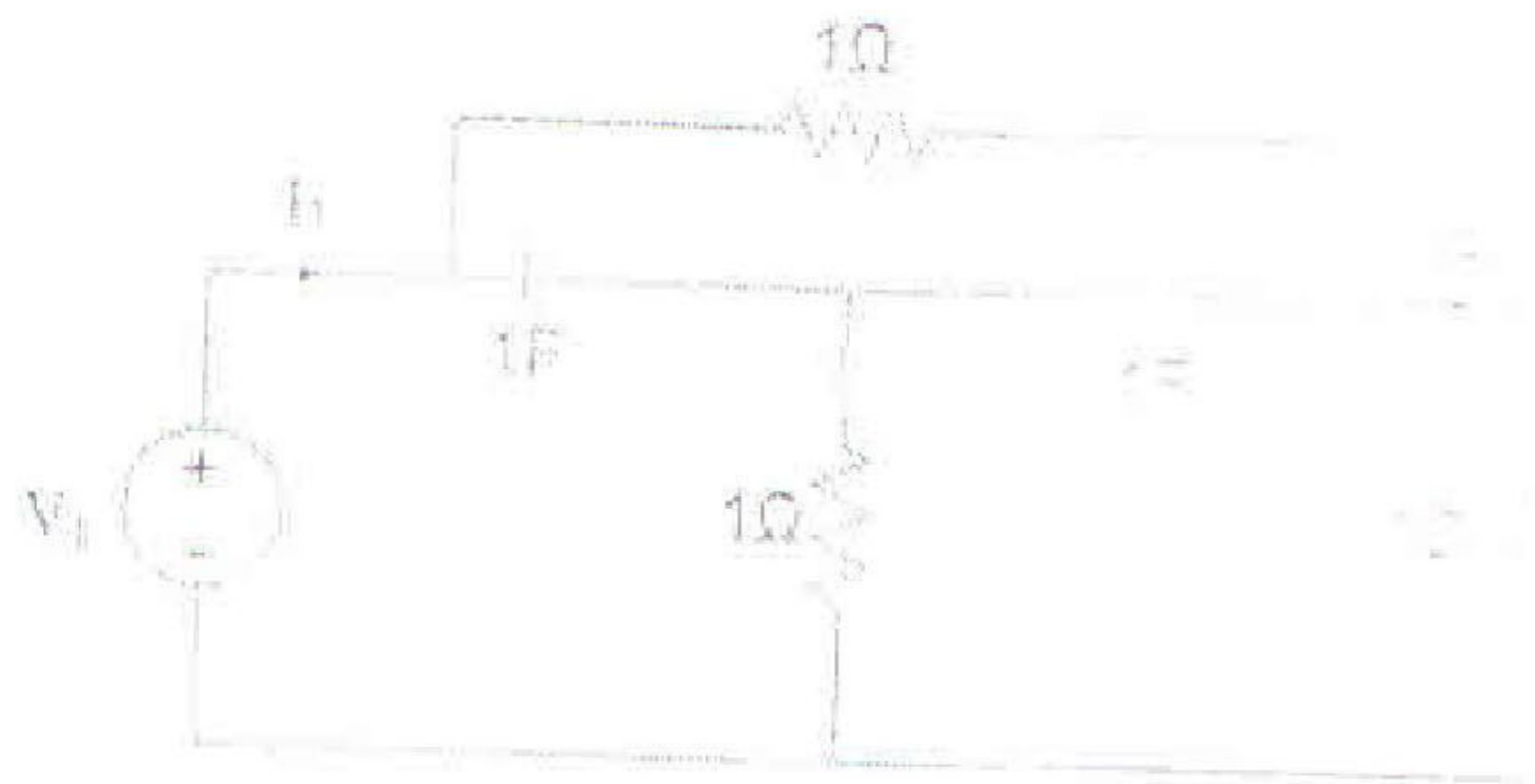


4. (a) Find A, B, C, D parameters for the network 10

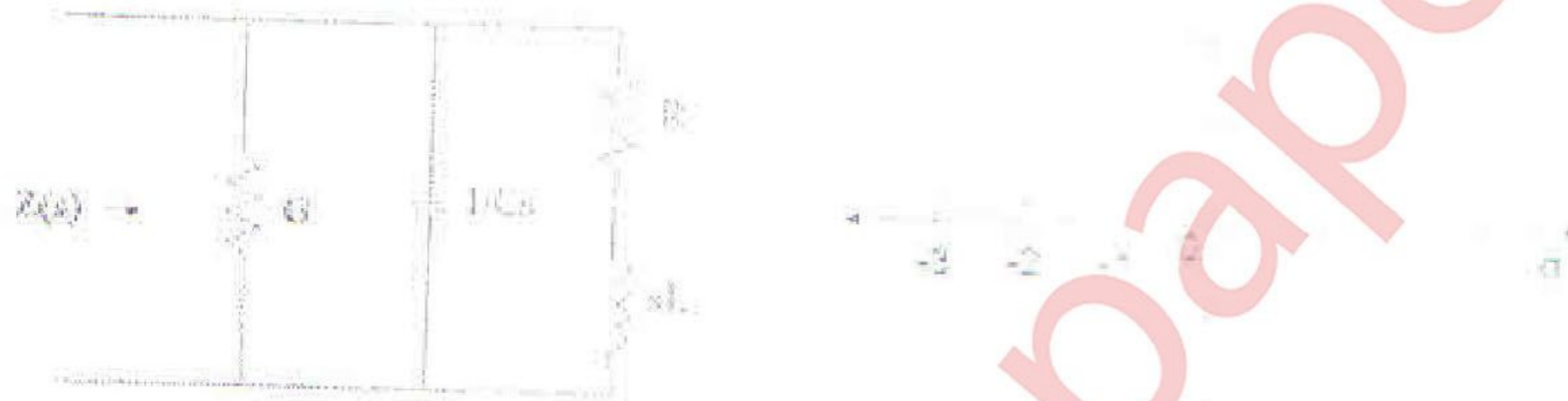


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- (b) Find the driving point admittance  $Y_{11}$  and transfer admittance  $Y_{12}$  10



5. (a) A network and pole zero diagram for a  $RC$  one-port impedance  $Z(s)$  are shown in figures. Calculate the values of the parameters  $R$ ,  $C$ ,  $G$  and  $C$  if  $Z(j0)=1$ . 10



- (b) Synthesize the following function by Foster I and Cauer I form 10

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

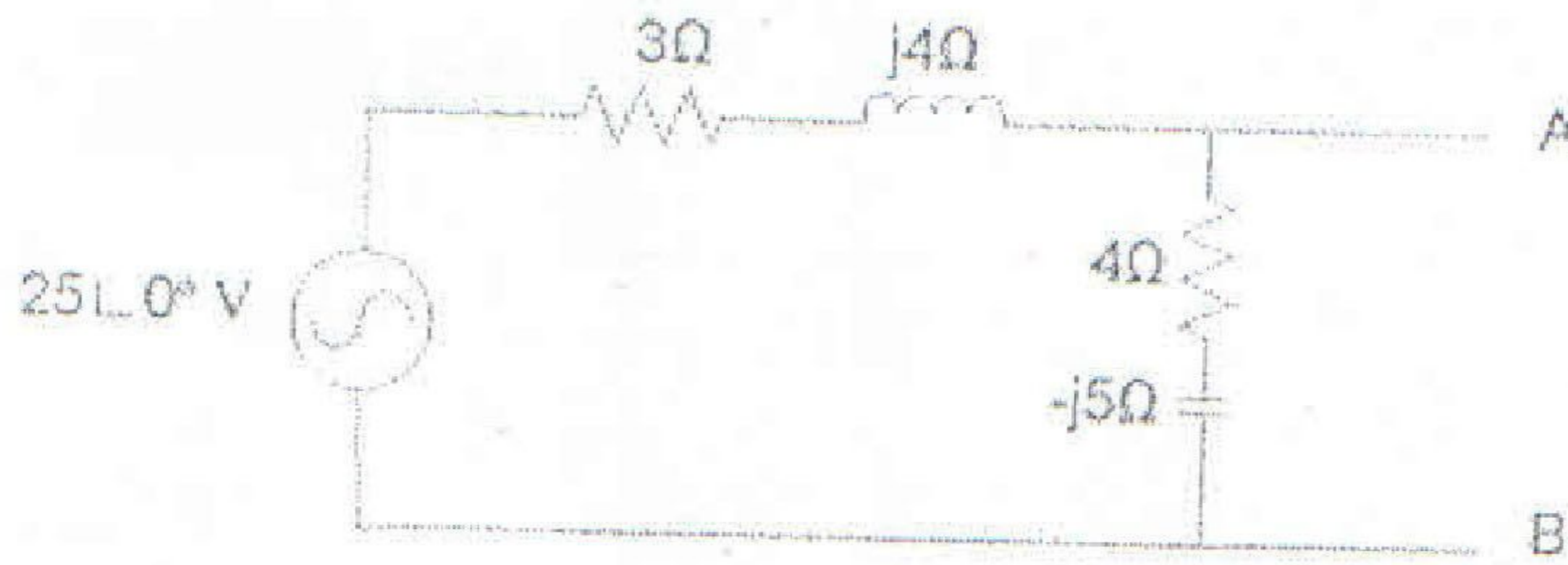
6. (a) Write the mesh equation for the circuit. Find Y and Z parameters. 10



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- (b) Find the Norton's equivalent across A-B in the figure shown.

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- (c) Write the mesh equations for circuit

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