

Time:3 Hrs

Marks:80

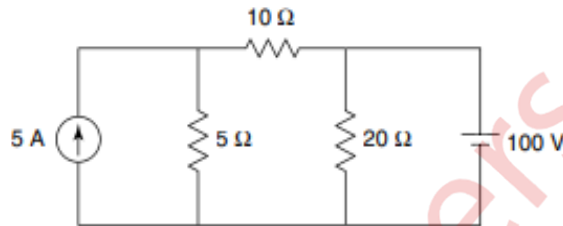
Note:

- Question No. 1 is compulsory.
- Answer any **three** from the remaining five questions.
- Assume suitable data if necessary and justify the same.

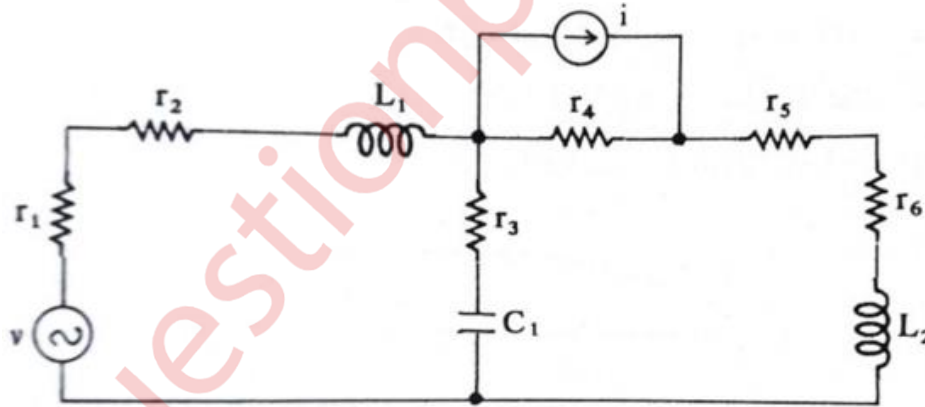
Q1 Each question carries five marks

20M

- Derive condition for symmetry for (A-B-C-D) parameters.
- Determine the current through the 20 ohm in the following circuit

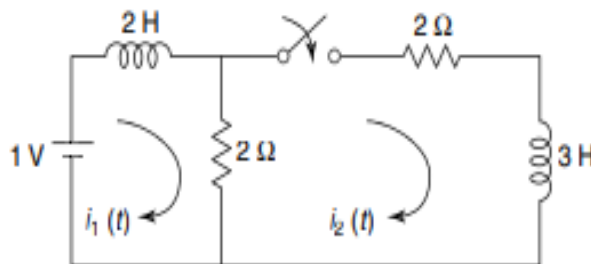


- State and Explain Maximum Power Transfer Theorem.
- Draw the dual of given network.

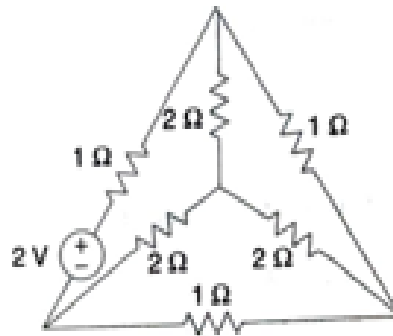


Q2 a In the network shown, the switch is closed at  $t = 0$ , the steady-state being reached before  $t = 0$ . Determine the current  $i_1(0^+)$  and  $i_2(0^+)$ .

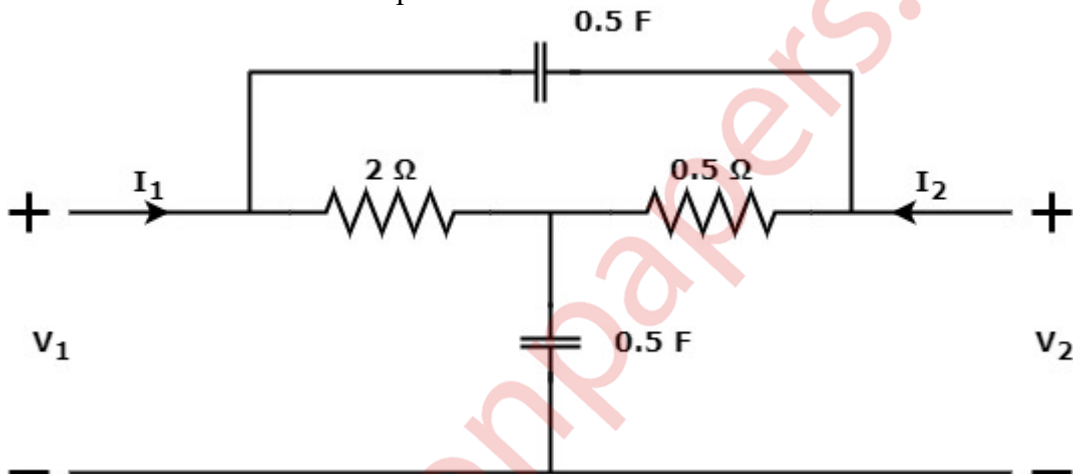
10M



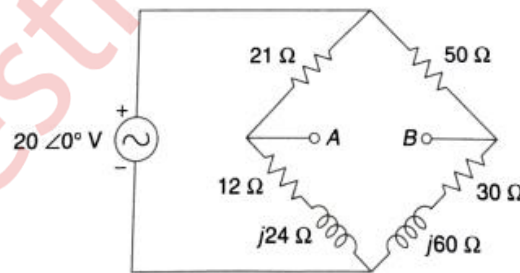
- b For the following circuit, draw (a) graph, (b) tree, and (c) write the fundamental tieset matrix. 10M



- Q3 a Determine the Y parameters of the network shown. 10M

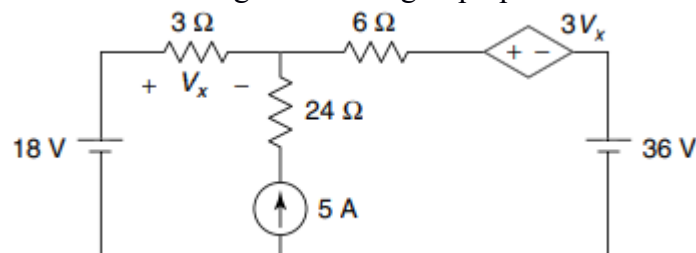


- b Obtain Thevenin's Equivalent network of following figure. 10M

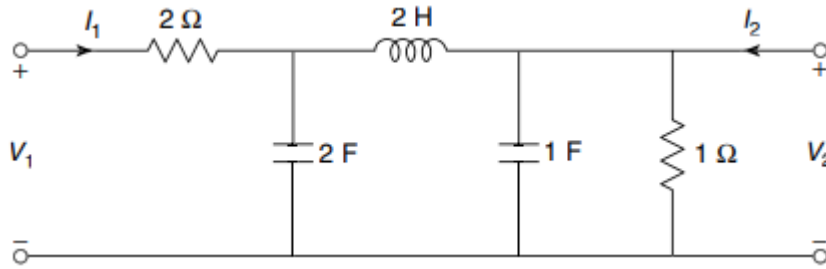


- Q4 a Express Z parameters in terms of Y parameters and h parameters 10M

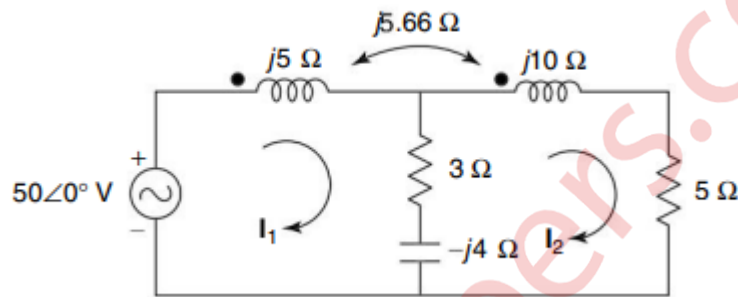
- b Find the voltage  $V_x$  for the following circuit using Superposition theorem. 10M



- Q5 a Derive the condition for reciprocity and symmetry for A-B-C-D parameters 10M  
 b For the given ladder network, determine voltage transfer function  $V_2/V_1$  10M



- Q6 a Determine the voltage across the  $3\Omega$  resistor using mesh analysis. 10M



- b Plot Pole zero diagram and obtain  $V(t)$  of given network 10M

$$V(s) = \frac{3s}{(s+2)(s^2+2s+2)}$$

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