

S.E. ELEC C-Scheme KT June 2026.

(4)

Time: 3 Hours

Marks: 80

06/06/26

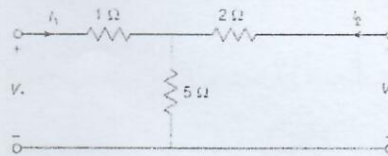
Note:

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

Q.1 Each question carries five marks.

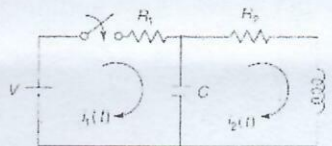
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- a. Find the transmission parameters for the network shown in Fig

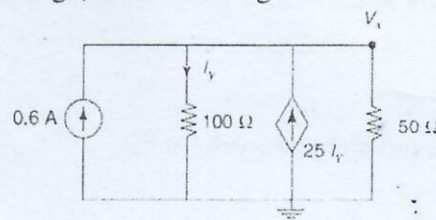


- b. The voltage
- $V(s)$
- of a network is given by
- $V(s) = \frac{(s+8)(s+10)}{(s+4)(s^2+2s+2)}$
- . Plot its pole-zero diagram.

- c. In the network shown in Fig., assuming all initial conditions as zero, find
- $i_1(0+)$
- and
- $i_2(0+)$

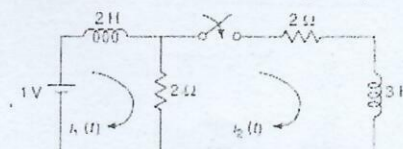


- d. For the network shown in Fig., find the voltage
- V_x
- .



- Q.2 a. In the network shown in Fig., the switch is closed at
- $t = 0$
- , the steady-state being reached before
- $t = 0$
- . Determine current through inductor of 3 H.

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b. The reduced incidence matrix of an oriented graph is

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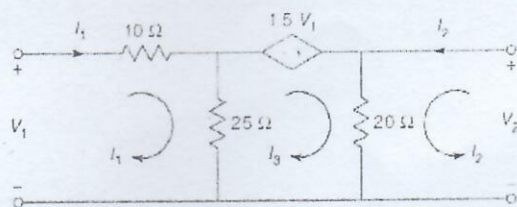
$$A = \begin{bmatrix} 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & -1 & -1 & -1 \\ -1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

(a) Draw the graph. (b) How many trees are possible for this graph?

(c) Write the tieset and cutset matrices.

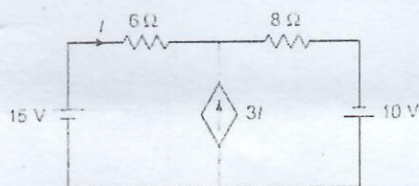
Q.3 a. Find transmission parameters for the two-port network shown in Fig.

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b. Find the current through the 6 ohm resistor using superposition theorem.

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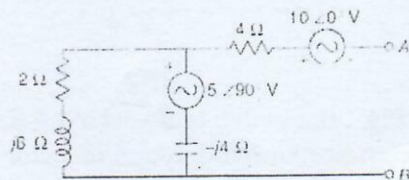


Q.4 a. Express Z parameters in terms of Y parameters and h parameters.

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b. Obtain Thevenin's equivalent network for Fig.

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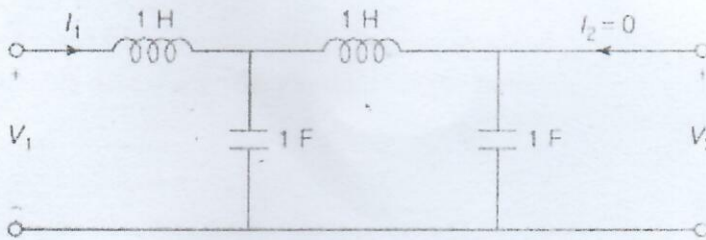


Q.5 a. Derive the condition for reciprocity and symmetry for A-B-C-D parameters

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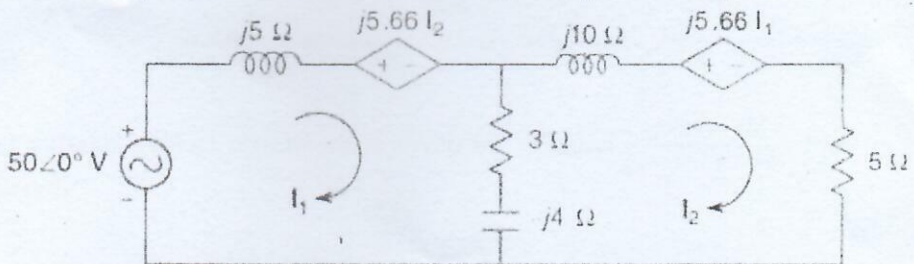
b. For the given ladder network, determine voltage transfer function V_2/V_1 .

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Q.6 a. Find the voltage across the 5Ω resistor in Fig. using mesh analysis.

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b. A network and its pole-zero configuration are shown in Fig. Determine the values of R , L and C if $Z(j0) = 1$.

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