

Unit-2

(Lecture-4)

3rd April - 2020 - Microwave Engg.

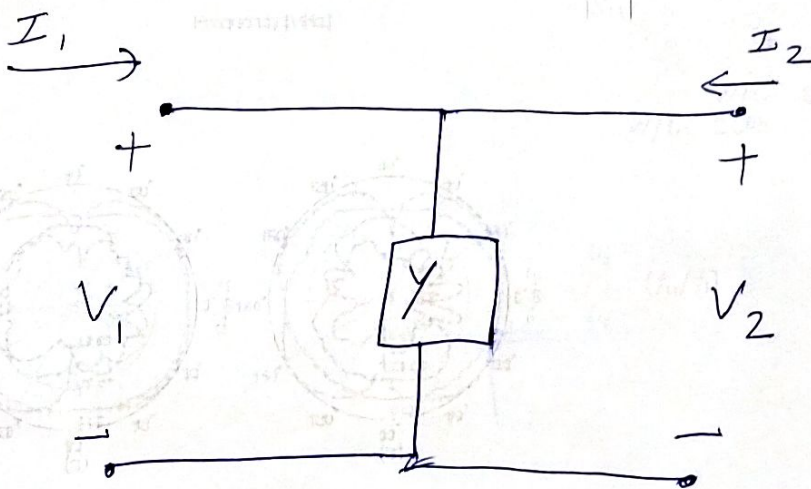
EC - 6th Sem (3rd year)

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ABCD Parameters (Transmission Lines)

Contd.

ABCD Parameters for Shunt Admittance



$$\begin{bmatrix} V_1 \\ I_1 \end{bmatrix} = \begin{bmatrix} A & B \\ C & D \end{bmatrix} \begin{bmatrix} V_2 \\ -I_2 \end{bmatrix} \quad \text{--- (1)}$$

From ckt,

$$V_1 = V_2 \quad \text{--- (2)}$$

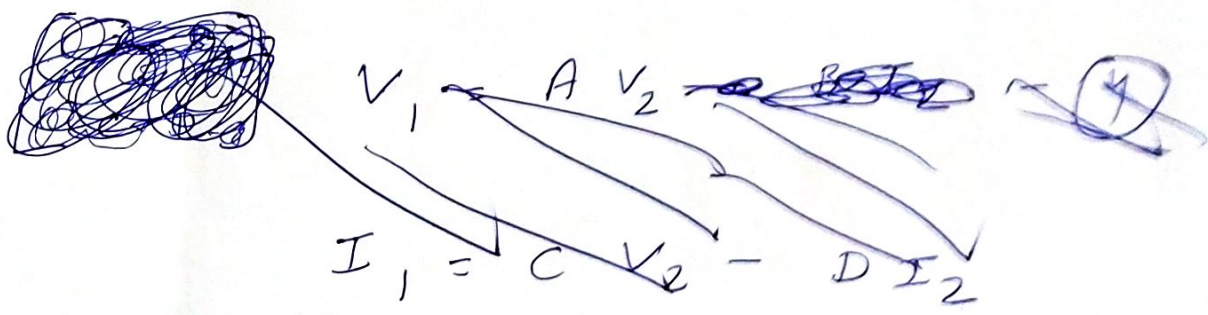
Current through 'Y' = $I_1 + I_2$

$$Y V_2 = I_1 + I_2$$

②
=

$$\left[I_1 = Y V_2 - I_2 \right] \quad - (3)$$

From ①, ~~②~~ ③



$$\left. \begin{aligned} V_1 &= A V_2 \\ V_1 &= -B I_2 \\ I_1 &= C V_2 \\ I_1 &= -D I_2 \end{aligned} \right\}$$

compare this with
② + ③

From ② and ③

$$\therefore \begin{bmatrix} A & B \\ C & D \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ Y & 1 \end{bmatrix}$$

③

=

Q
Now check whether this is symmetrical & Reciprocal network or not.

* Since, $[A=D]$, Network is symmetrical.

* For reciprocal network,

$$AD - BC = 1$$

Here, $AD = 1$ & $BC = 0$

$$\therefore [AD - BC = 1]$$



Hence network is reciprocal also.

\therefore * This network is both symmetrical & reciprocal.

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