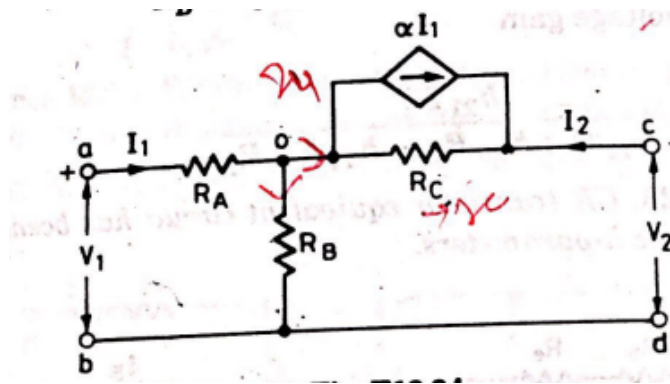# TUTE 7

Network, Analysis, and Synthesis

Q.1. Find the hybrid parameter of the following circuit shown in figure 1.

Ans.
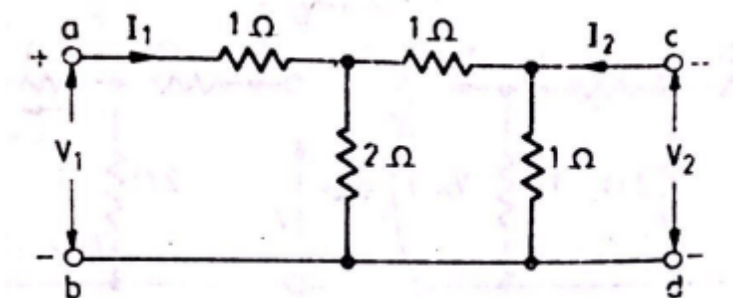
$$
\begin{bmatrix} h_{11} & h_{12} \\ h_{21} & h_{22} \end{bmatrix} = \begin{bmatrix} \dfrac{R_A(R_B + R_C) + (1-\alpha)R_B R_C}{R_B + R_C} & \dfrac{R_B}{R_B + R_C} \\ \dfrac{(\alpha R_C + R_B)}{(R_B + R_C)} & \dfrac{1}{(R_B + R_C)} \end{bmatrix}
$$

Figure.1.

Q2. Obtain transmission parameters of the network shown in figure 2

$$
\text{Ans.} \quad \begin{bmatrix} A & B \\ C & D \end{bmatrix} = \begin{bmatrix} 4 & \dfrac{5}{2} \\ 2 & \dfrac{3}{2} \end{bmatrix}
$$

Figure 2

Q3. Find ABCD parameters of the following network shown in figure 3.

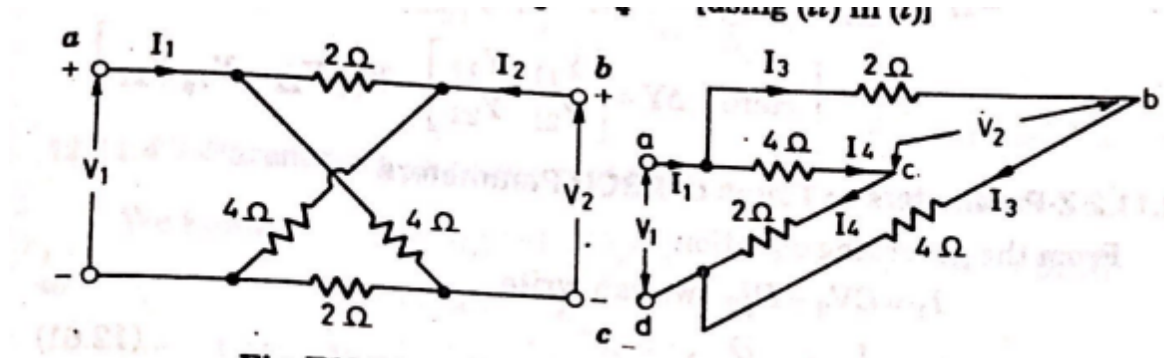Ans. $\begin{bmatrix} A & B \\ C & D \end{bmatrix} = \begin{bmatrix} 3 & 8 \\ 1 & 3 \end{bmatrix}$

Figure 3

Q4. In the circuit shown in figure 4 r_1= 10 k Ω, r_2= 40 k Ω, α = 25, β = 3*10^-4, and R_L= 50 k Ω. Find out (1). h parameters (2). Voltage gain

Ans. $\begin{bmatrix} h_{11} & h_{12} \\ h_{21} & h_{22} \end{bmatrix} = \begin{bmatrix} 10 & 3*10^{-4} \\ 25 & 25*10^{-6} \end{bmatrix}$ and (V_2/V_1= -56.5)
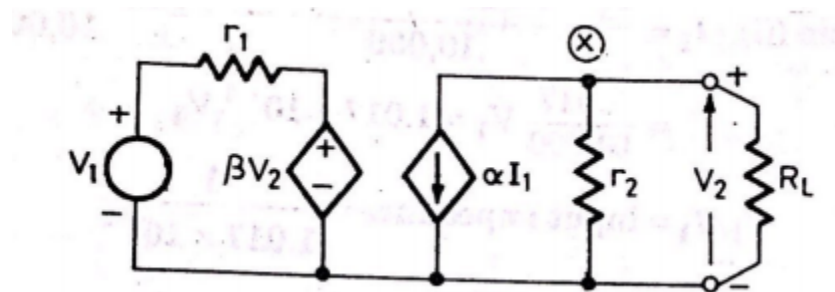

Figure 4