Tutorial-2
Winter_2025
Basic Electronics (ECE113)

Q1: Transform the dependent source to a voltage source, in the given following circuit of Figure-1 using source transformation then calculate V_0.

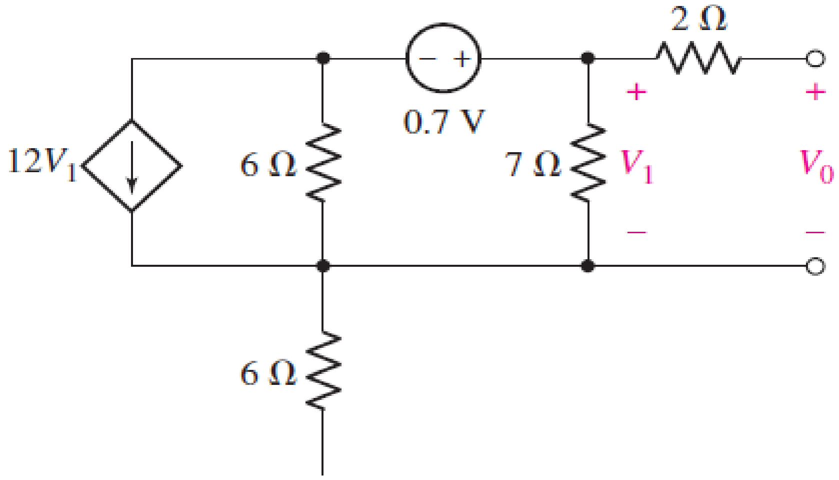

Figure 1

Q2: Employ Thevenin's theorem to obtain a two-component equivalent for the network shown in Figure-2 & Determine the power supplied to a **1 M Ω** resistor connected to the network if current I_1 **= 19 μA,** $R_1 = R_2 =$ **1.6 M Ω,** $R_3 =$ **3 M Ω**, and $R_4 = R_5 =$ **1.2 M Ω**.

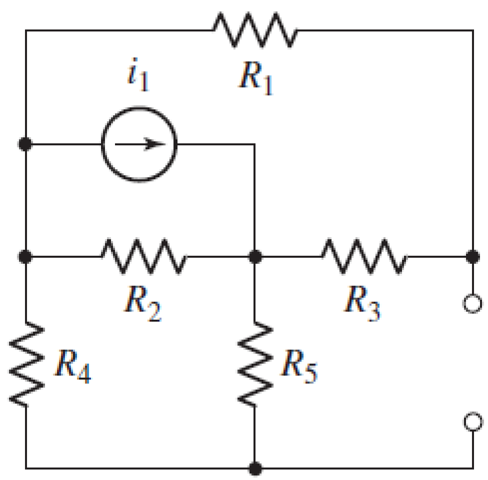

Figure 2

Q3: With regard to the network depicted in Figure-3, determine the Thevenin equivalent as seen by an element connected to terminals- **(i)** $\boldsymbol{a\ and\ b}$ **(ii)** $\boldsymbol{a\ and\ c}$ **(iii)** $\boldsymbol{b\ and\ c}$.

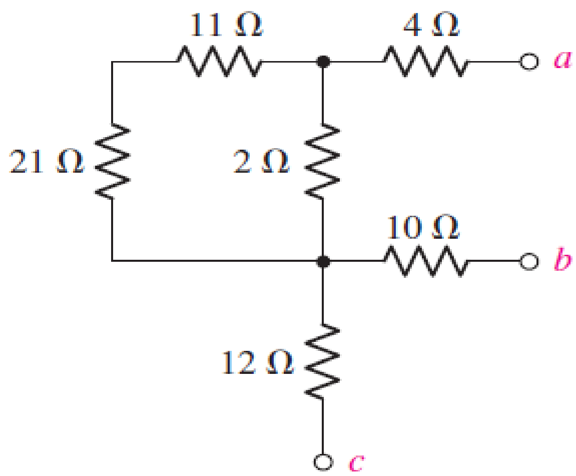

Figure 3

Q4: For the circuit of Figure-4, **(a)** Employ Norton's theorem to reduce the network connected to R_L to only two components. **(b)** Calculate the downward directed current flowing through R_L if it is a **3.3 KΩ** resistor.

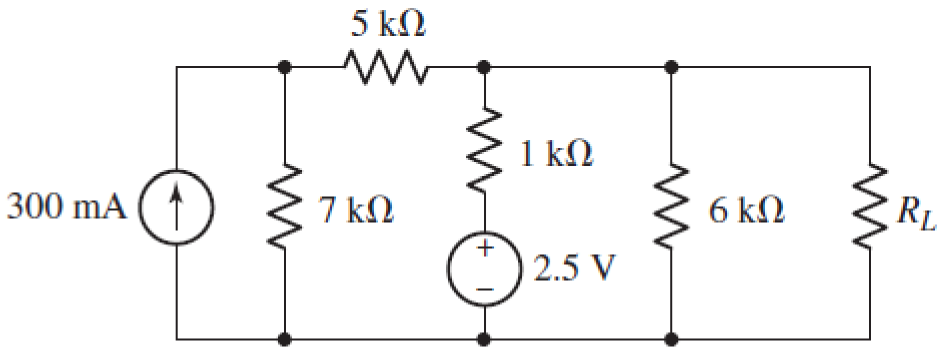

Figure 4

Q5: Determine the Thevenin equivalent of the network shown in Figure-5, as seen looking into the two open terminals.

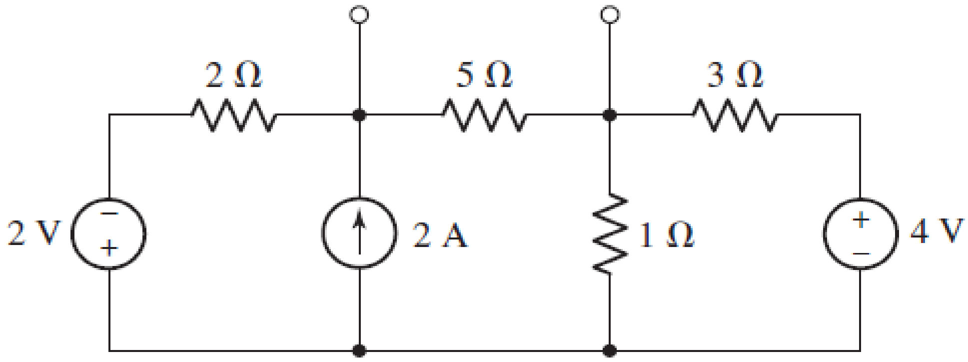

Figure 5

Q6: With regard to the circuit represented in Figure-6, first transform both voltage sources to current sources, reduce the number of elements as much as possible, and determine the voltage V_3.

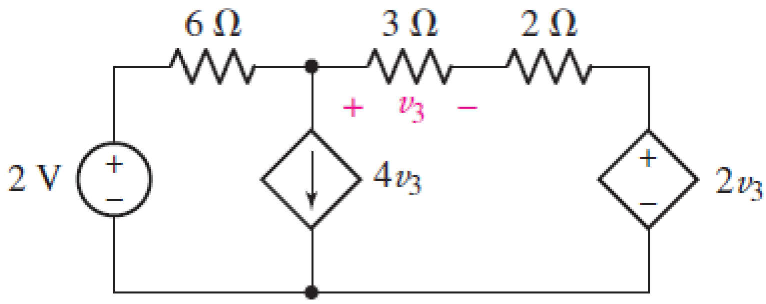

Figure 6

<u>Q7</u>: For the circuit of Figure-7, plot $\boldsymbol{i_L}$ versus $\boldsymbol{v_L}$corresponding to the range of $\mathbf{0} \leq \boldsymbol{R} \leq \infty$.

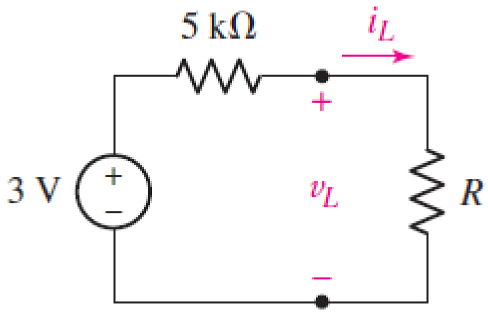

Figure 7

<u>Q8</u>: (a) Employ superposition to determine the individual contribution from each independent source to the voltage ***v*** as labelled in the circuit shown in Figure-8. **(b)** Compute the power absorbed by the **2 Ω** resistor.

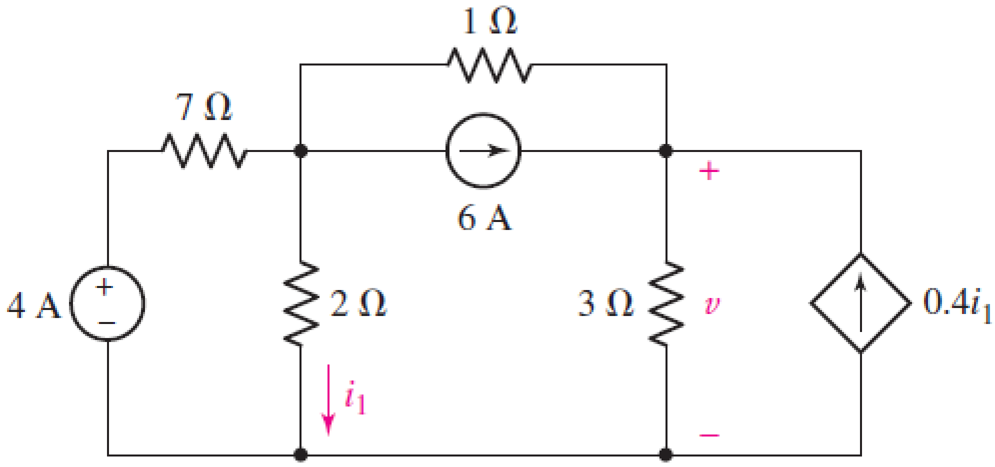

Figure 8