Principles of Electrical Engineering

Dr.Santhosh.T.K.

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Assignment - 1

1. Find the equivalent resistance between the terminals 'A'&'B'.

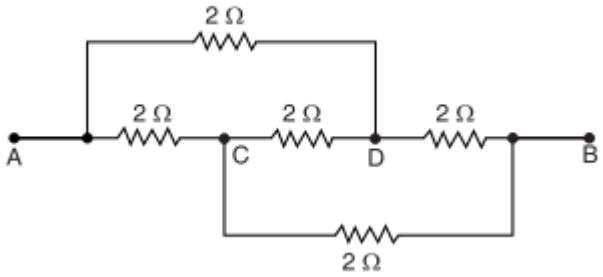

Figure 1:

2. For the circuit shown in Figure 2 , find the currents flowing in all branches using Mesh Analysis.

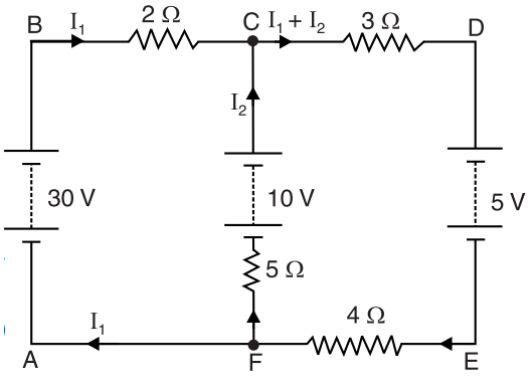

Figure 2:

3. Show that the node voltage v_0 is the average of the two input voltages using the method of superposition in the circuit shown in Figure 3.

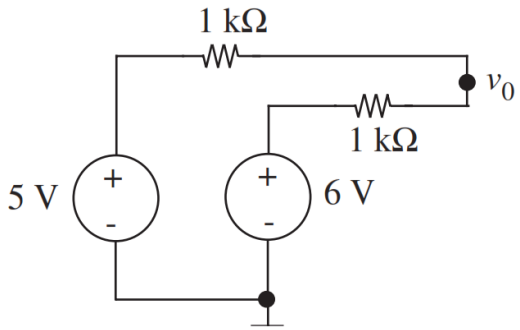

Figure 3:

4. Find the resistance of 1000 metres of a copper wire 25sq.mm in cross-section. The resistance of copper is 1/58 ohm per metre length and 1 sq. mm cross-section. What will be the resistance of another wire of the same material, three times as long and one-half area of cross-section ?

5. With the help of star/delta transformation, obtain the value of current supplied by the battery in the circuit shown in Figure 4.

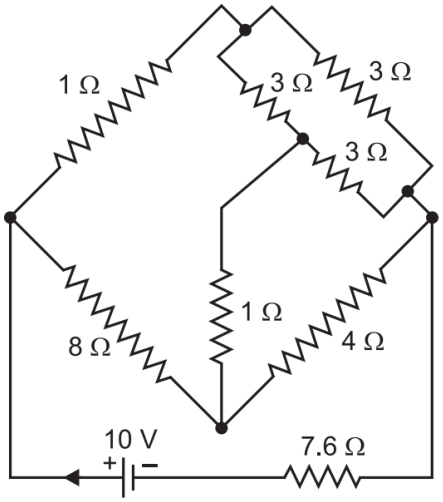

Figure 4:

6. Determine the current in 4 Ω resistance of the circuit shown in Figure 5 .

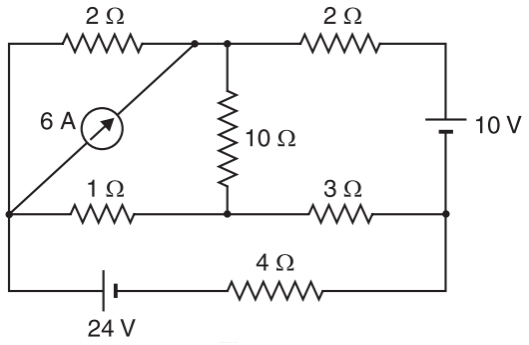

Figure 5:

7. Determine the currents I_1, I_2 and I_3 for the circuit shown in Figure 6 using superposition theorem.

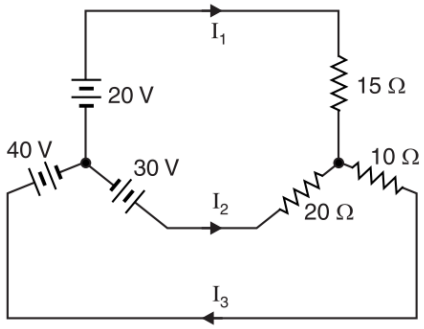

Figure 6:

8. Find the Thevenin equivalent circuit lying to the right of terminals x - y in Figure 7.

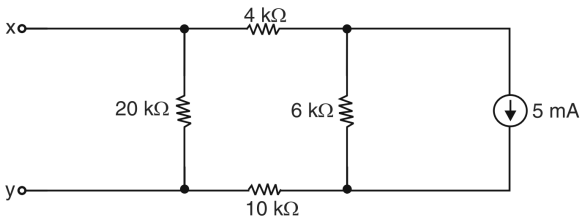

Figure 7:

9. Using Thevenin's theorem, find the voltage across 3 Ω resistor in Figure 8.

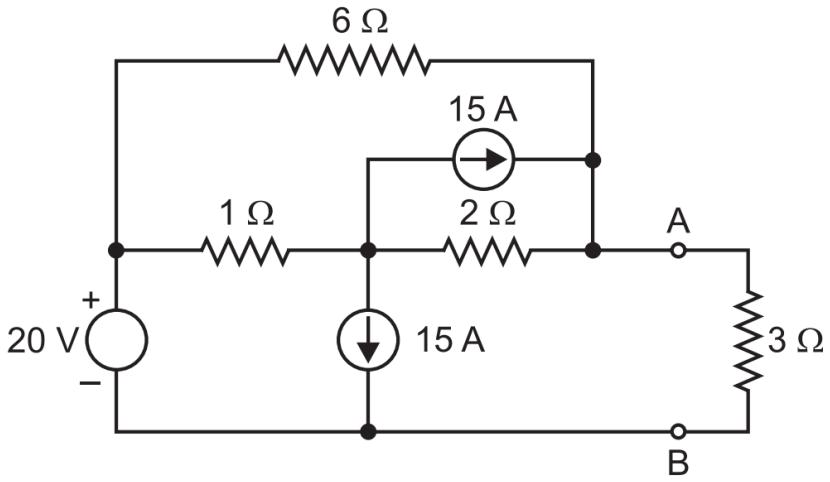

Figure 8:

10. For the circuit shown in Figure 9, find the value of R that will receive maximum power. Determine this power.

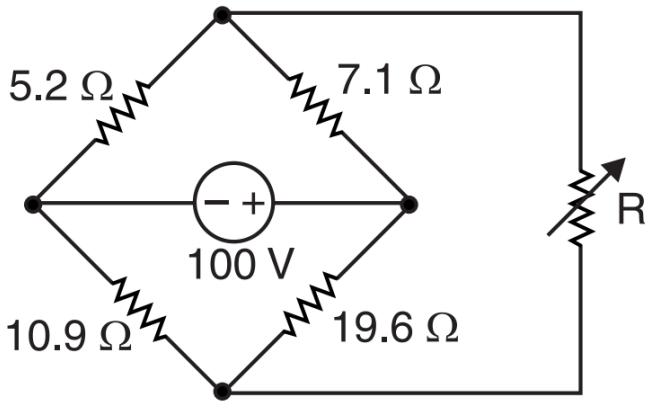

Figure 9: