Electrical Power Engineering Fundamentals

Departamento de Ingeniería Eléctrica. Universidad Carlos III de Madrid

Module 2. Analysis of DC Circuits. Week 4

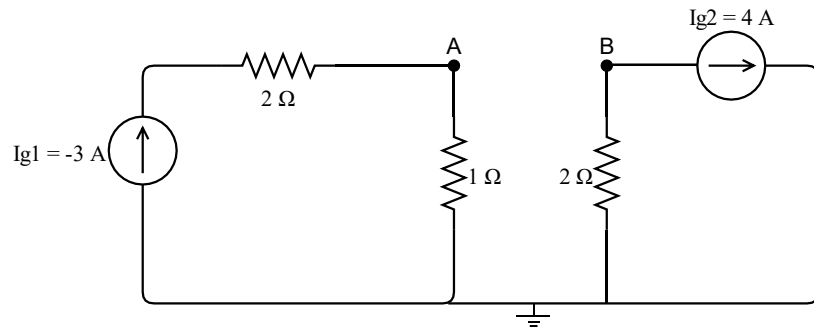**Exercise 1.** Find the Thévenin and Norton equivalents between nodes A and B for the following circuit.

Figure 1 DC circuit 1

Solution: U_{Th} = 5V; R_{TH} = 3Ω; I_{Norton} = 1.67A

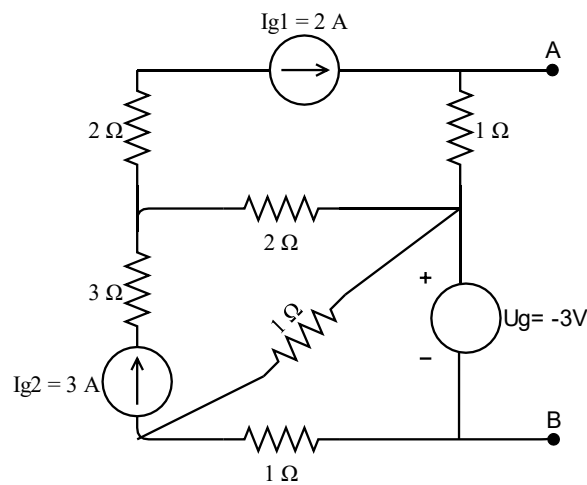**Exercise 2.** Find the Thévenin and Norton equivalents between nodes A and B for the following circuit.

Figure 2 DC circuit 2

Solution: U_{Th} = -1V; R_{TH} = 1Ω; I_{Norton} = -1A

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Exercise 3. In the following circuit:

    a) Using the Thévenin equivalent, find Ir for different values of R: 2 Ω, 3 Ω and 8 Ω.

Figure 3. DC circuit 3

Solution: a) U_{Th} = 1V; R_{TH} = 2 Ω; Ir (R=2 Ω)=0.25A; Ir (R=3 Ω)=0.2A; Ir (R=8 Ω)=0.1A;

Exercise 4. Find the Thévenin and Norton equivalents between nodes A and B for the following circuit.

Figure 4. DC circuit 4

Solution: U_{Th} = 2.5V; R_{TH} = 1 Ω; I_{Norton} = 2.5 A

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