

# Electrical Power Engineering Fundamentals

Departamento de Ingeniería Eléctrica. Universidad Carlos III de Madrid

Module 1. Basic Concepts. Week 1

**Exercise 1.** In the following circuit:

- Find  $U_{AB}$  and  $U_R$  when  $I_g = 2$  A and  $U_g = -5$  V
- Find  $U_{AB}$  and  $U_R$  when  $I_g = -1$  A and  $U_g = -2$  V

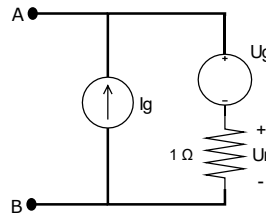


Figure 1 DC circuit 1

**Exercise 2.** In the following circuit:

- Find  $U_{BA}$  and  $U_R$  when  $I_g = 2$  A and  $U_g = 2$  V
- Find  $U_X$  and  $U_R$  when  $I_g = -2$  A and  $U_g = 2$  V

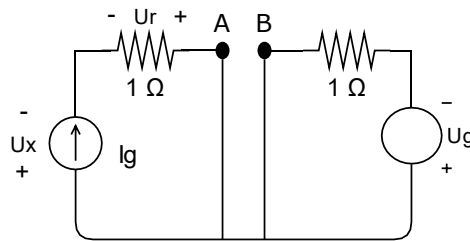


Figure 2 DC circuit 2

**Exercise 3.** In the circuit below:

- Find  $U_X$  and  $U_{AB}$  when  $I_g = 2$  A and  $U_g = 5$  V
- Find  $U_X$  and  $U_{BA}$  when  $I_g = -2$  A and  $U_g = -5$  V

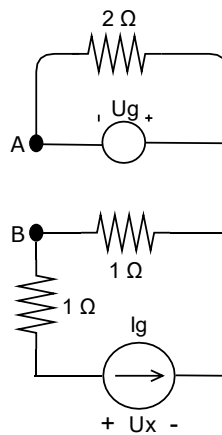


Figure 3. DC circuit 3

**Exercise 4.** In the circuit below:

- a) Find  $U_X$  and  $U_{AB}$  when  $I_g = 2 \text{ A}$  and  $U_g = 2 \text{ V}$
- b) Find  $U_X$  and  $U_{BA}$  when  $I_g = -1 \text{ A}$  and  $U_g = 0 \text{ V}$

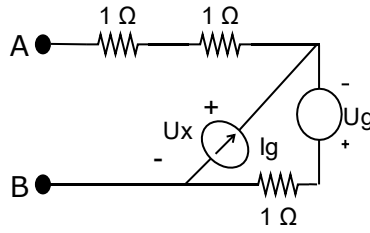


Figure 4. DC circuit 4

**Exercise 5.** In the circuit below:

- a) Find  $I_{AB}$  and  $U_{AB}$  when  $I_g = 5 \text{ A}$  and  $U_g = 2 \text{ V}$
- b) Find  $I_{AB}$  and  $U_{AB}$  when  $I_g = -2 \text{ A}$  and  $U_g = -5 \text{ V}$

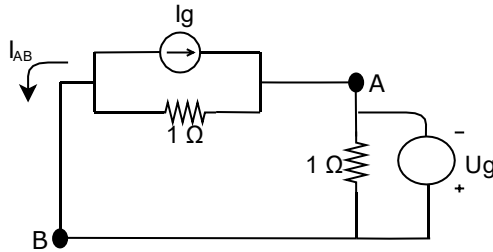


Figure 5. DC circuit 5

**Exercise 6.** In the circuit below, calculate the currents  $I_1$  and  $I_2$ .

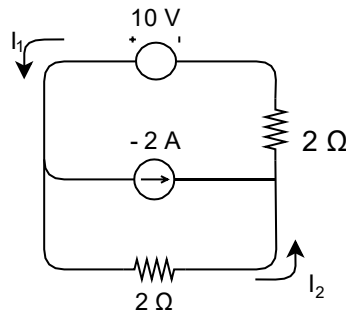


Figure 2. DC circuit 6