



ELECTRONICS TEST

Calculators and documents are not allowed. The points scale is given as an indication. Answers exclusively on the questions sheet. If you run out of space, you can use the back of the pages.

Exercise 1 Lecture questions (6 Points - No negative points)

Select the correct answer

1. A branch of a circuit corresponds to a portion of a circuit located between two consecutive nodes.

a- TRUE

b- FALSE

2. To measure the voltage across a dipole, one uses an ammeter connected in series with this dipole.

a- TRUE

b- FALSE

3. Current entering an active dipole is less than the one leaving it

a- TRUE

b- FALSE

4. If two dipoles are in series, then

a- They have the same voltage.

b- They belong to the same branch.

c- None of these answers

5. A resistance of 100 Ohms is traversed by a current of 10 A. What is the voltage across its terminals ?

a- 1000 A

c- 110 V

b- 10 V

d- 1000 V

6. A resistance has a voltage of 100 V across its terminals. If the current that traverses it is 0.1 A. What is the value of this resistance ?

a- 10 Ω

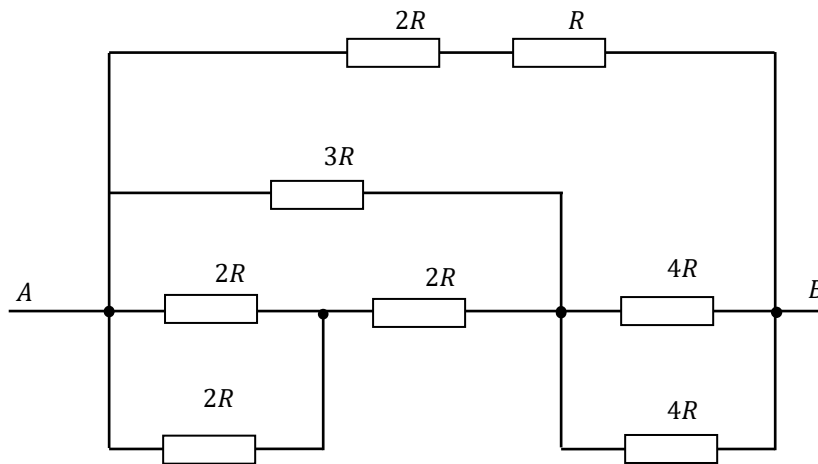
c- 1 k Ω

b- 100 Ω

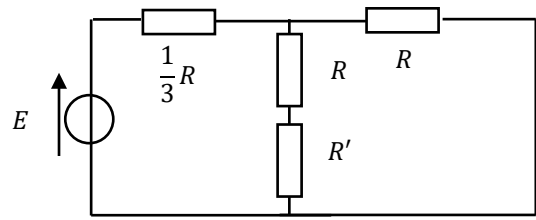
d- None of these answers

Exercise 2 Resistive network (8 Points)

1. What is the equivalent resistance seen from points A and B ? (Detail your calculations)



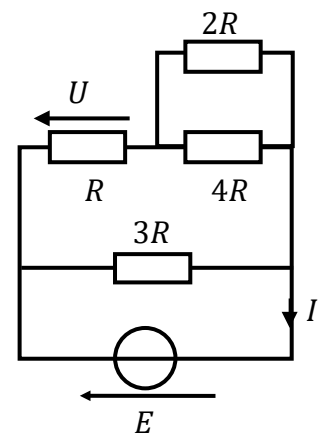
2. What must be R' value so that the equivalent resistance seen from the voltage source E is equal to R ? You will give your answer as a function of R .



Exercise 3 Kirchhoff Laws (6 points)

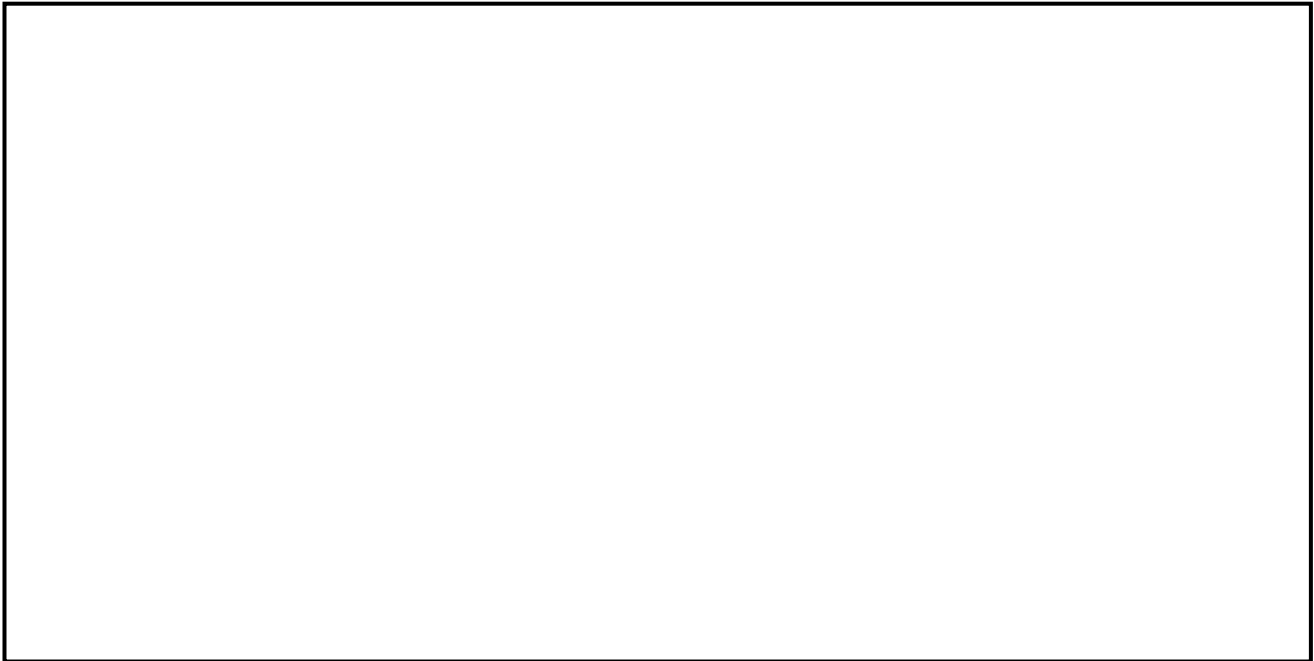
Consider the circuit opposite

1.
 - a. What can be said about the $2R$ and $4R$ resistances ?



- b. What is the equivalent resistance of these two resistances

c. Deduce the expression of voltage U as a function of E and R .



2.

a. What is the equivalent resistance seen by the voltage source E



b. Deduce the expression of current I as a function of E and R .

