MAY 20TH, 2019

"ANÁLISIS DE NODOS"

PRACTICE 7

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1CM10

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PRACTICE DEVELOPMENT

Using node analysis method with the circuit below. Built the circuit and measure the values required in the table 1.

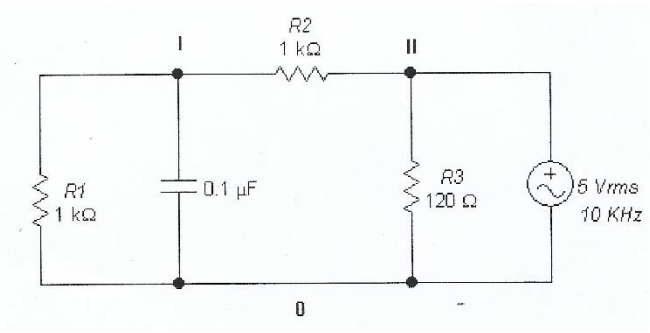


Table of Values 1

Points	Measured Values (amps)
$I_{I,0}$	407 micro
$I_{II,I}$	2.85 milli
$I_{II,0}$	26.6 milli

Now, get voltage values and fill the table below.

Table of Values 2

Points	Measured Values (volts)
$V_{I,0}$	438.57 milli
$V_{II,I}$	3.1912
$V_{II,0}$	3.05

Finally, get power values and fill the table below.

Table of Values 3

Resistor	Power (watts)
R_1	$1.65x10^{-4}$
R_2	$8.12x10^{-3}$
R_3	0.707

QUESTIONARY

WHAT IS A NODE IN AN ELECTRIC CIRCUIT?

A node is a place where two or more components have a common connection.

WHAT IS VOLTAGE NODE?

By Electric Current Kirchhoff Law, we know no charge can be accumulated in any node.

WHAT IS A REFERENCE NODE?

The most used node (which connects most of the elements).

DESCRIBE HOW TO USE NODE ANALYSIS

Identify node ubications.

Select a reference node and connect it with ground.

Assign a voltage value on every node.

Assign electric current directions.

Get the equations.

Resolve those equations.

DEMONSTRATE THAT AN REACTIVE ELEMENT HAS ZERO WATTS OF ELECTRIC POWER

We know that Power is equal to V x I x cosβ/2, but voltage and electric current always have ±90 degrees, and cos of 90 degrees is 0, no matters what inductor or capacitor you put, the angle is the same, so (number of voltage) x (number of electric current) x (zero)/2, is always zero.

CONCLUSIONS

CABAÑAS BAXCAJAY JESÚS FRANCISCO

The node analysis in circuits is a very useful method where we locate points where two or more elements cross. We must find an equation for each node, using Kirchhoff Law. We observed that node analysis is possible when all nodes have conductance. This method is practical, simple and sometimes it reduces time. It's important that we observed carefully the circuit to choose the best method to solve it.

HERNÁNDEZ VELÁZQUEZ ÁNGEL

The analysis of a circuit by the method of nodes helps us obtain equations to calculate the current, voltage or value of certain components so that the necessary is fulfilled. This method must be used with care because in many cases it can become a double-edged sword that damages the calculation instead of facilitating it.

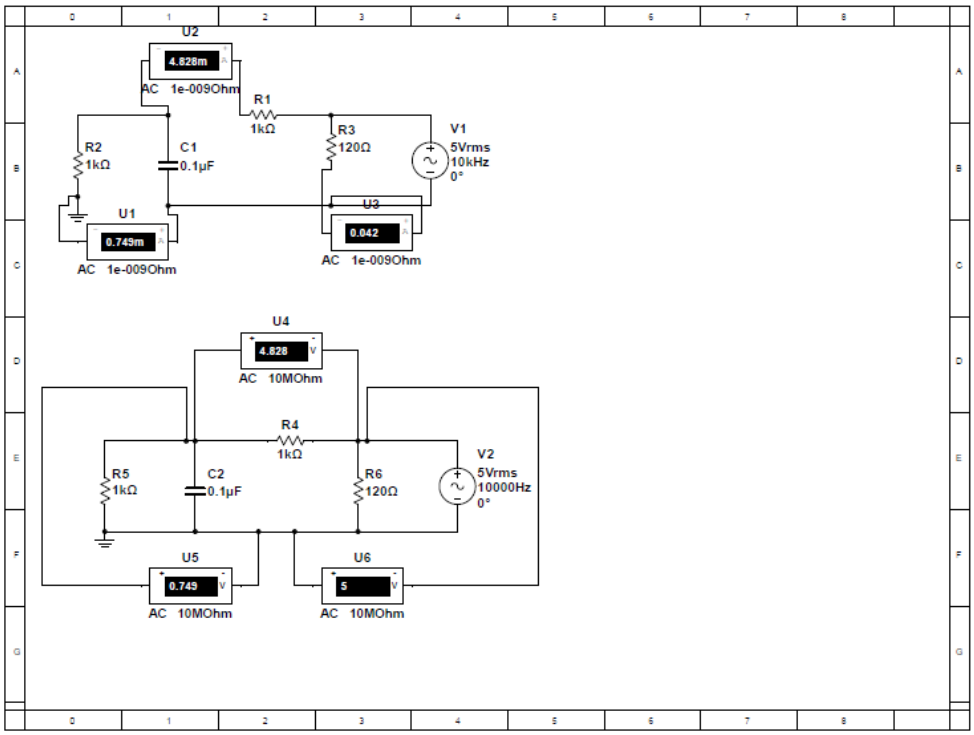
MARTÍNEZ CORONEL BRAYAN YOSAFAT

Node analysis (like other techniques) make a faster work, so the productivity of every of us is increased by this. That is amazing, because if we can do the same things than before, but faster, it means we can resolve more problems in less time. If we make it perfect, we can just resolve every circuit.

CALCULATIONS

There were no calculations.

SIMULATIONS



INSTITUTO POLITÉCNICO NACIONAL

ESCUELA SUPERIOR DE CÓMPUTO

LABORATORIO DE ANÁLISIS FUNDAMENTAL DE CIRCUITOS

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PRÁCTICA No. 7

"ANÁLISIS DE NODOS"

GRUPO: 1CM10

EQUIPO: 10

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COMENTARIOS: