SP212-Spring-2016

CH-27-B Assignment

First do the following Wiley-Plus assignment: Assignment #27b

After completing the Wiley-Plus, in your homework notebook, complete the following problems:

CH27 Question #6.

CH27 Problems # 30

To check your work, the answers to the odd problems are in the back of the book.

The answers to the even problems are:

#30) a) \(i_2 = 0\)  \hspace{0.5cm} b) \(i_3 = 1.25A \hspace{0.1cm} \text{downward}\)

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**Homework**

Then complete the attached worksheets: (Note: the above problems were designed to ensure you have the skills to solve the worksheet problems. It is imperative to your learning of the problem solving technique to do the above problems **BEFORE** attempting the worksheet problems. **You are graded on both!** Homework notebooks are graded.)
For each of the equations below,

1) State what each term is in your own words ...
2) What the units of each term are...
3) What is the general use of that equation in your own words?

A. \[ \frac{1}{R_{eq}} = \sum_{j=1}^{n} \frac{1}{R_j} \]

B. *Thermal Energy* = \[ \int_{t}^{i} i^2 R \, dt \]

C. Explain Kirchhoff's **current** law in your own words.

D. Explain Kirchhoff's **voltage** law in your own words.

E. Finish the following sentences:

Resistors in parallel feel the same ____________.
Resistors in series feel the same ________.

CH-27-B-2:

In this simple circuit below, if 2A of current enters the network at point a, what is the magnitude of voltage between points a and b of the following resistor network?

Show all work
For the given circuit and given directions of the currents $I_1$, $I_2$ and $I_3$, solve for the values of $I_1$ and $I_2$. Show all work
CH-27-B-4:

A physics student takes a 16-mW, 1.5-V rated incandescent light bulb out of the socket during lab 2 and measures its resistance with an Ohmmeter. He reports a value of 10.5-Ω. He connects an ammeter to the light bulb socket to measure the current drawn by the bulb while operating. Inserting the bulb back into the socket and operating the bulb from a 1.5-V source, he reports the current to be .143 amps.

a) Why is the following situation impossible causing the student to fail the lab? (Be specific and prove with equations!)

b) What would the correct values be, given that the socket is truly at 1.5-V and the manufacturer’s rating of 16-mW is true as well?

Show all work