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PHYS 1260, section 001, Fall 2020

Chapter 20 (Homework)

INSTRUCTOR

Joel DeWitt

East Carolina University

Current Score

QUESTION	1	2	3	4	5	TOTAL SCORE	
POINTS	-/1	-/6	-/4	-/1	-/2	-/14	0.0%

Due Date

THU, OCT 22, 2020

11:59 PM EDT

Request Extension

Description

▼

Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by question parts. The

number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your last submission is used for your score.

1. [-/1 Points]

DETAILS

COLFUNPHYS1 20.P.001.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

Three wires are connected at a branch point. One wire carries a positive current of 12 A into the branch point, and a second wire carries a positive current of 4 A away from the branch point. Find the current carried by the third wire *into* the branch point.

2. [-/6 Points]

DETAILS

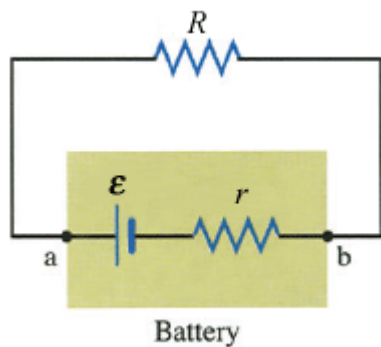
COLFUNPHYS1 20.P.006.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

For the circuit in the figure below, find the following. (Take $\mathcal{E} = 6.4$ V, $R = 5.4$ Ω , and $r = 1.1$ Ω .)



(a) the magnitude of the current and the direction of positive current

magnitude

direction

(b) the potential difference across the battery terminals a and b

(c) the rate at which heat is being produced in the 5.4 Ω resistor

(d) the rate at which heat is being produced inside the battery

(e) the rate at which the battery's chemical energy is being used

3. [-/4 Points]

DETAILS

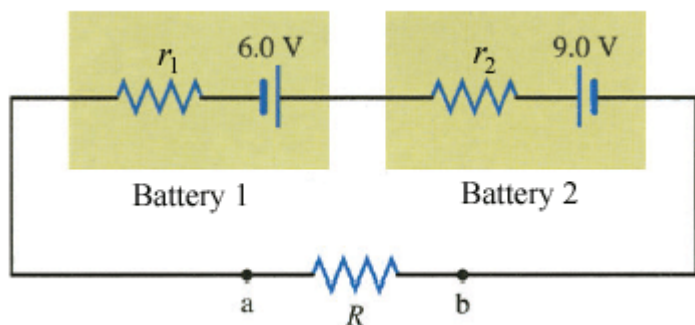
COLFUNPHYS1 20.P.007.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

The current in the figure below is 0.54 A . (Let the internal resistance of battery 1 be $r_1 = 1.4\ \Omega$ and the internal resistance of battery 2 be $r_2 = 1.1\ \Omega$.)



(a) Find the voltage drop V_{ab} .

(b) Find the power dissipated in R .

(c) Find the useful electric power supplied by battery 2. (Note: Do not forget the internal resistance of battery 2.)

(d) Find the rate at which chemical energy is stored in battery 1. (Note: Do not include power dissipated in the internal resistor of battery 1 in your answer.)

4. [-/1 Points]

DETAILS

COLFUNPHYS1 20.P.008.

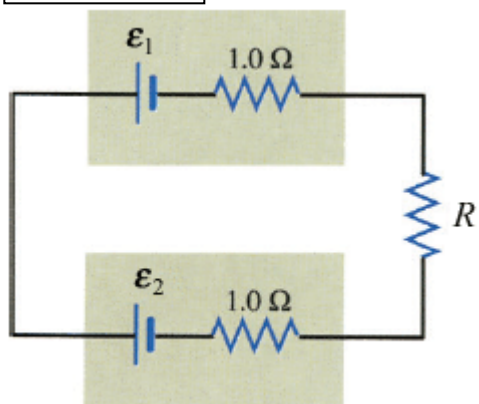
MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

In the figure below, find the potential difference across the terminals of the battery in which chemical energy is being converted to electrical potential energy.

(Take $\mathcal{E}_1 = 10.8$ V, $R = 17.1$ Ω , and $\mathcal{E}_2 = 5.4$ V.)



5. [-/2 Points]

DETAILS

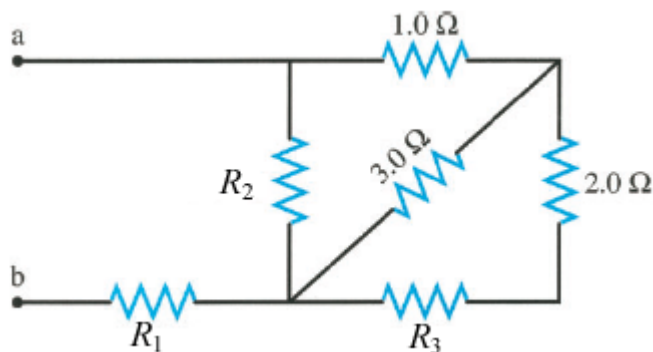
COLFUNPHYS1 20.P.014.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

Consider the following. (Take $R_1 = 11.1$ Ω , $R_2 = 6.8$ Ω , and $R_3 = 4.3$ Ω .)



(a) Find the equivalent resistance between points a and b in the figure below.

(b) Find the potential difference V_{ab} that will produce a current of 1.0 A in the $2.0\ \Omega$ resistor.

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