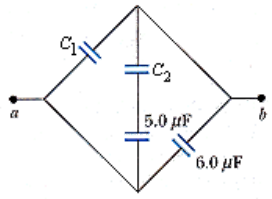
1. Question Details SerCP8 16.P.044. [882184]

Find the equivalent capacitance between points *a* and *b* in the combination of capacitors shown in the figure below. (C_1 = 3.0 μF and C_2 = 4.0 μF.)

[ ] μF



2. Question Details SerCP8 17.P.008. [1716982]

An aluminum wire carrying a current of 2.0 A has a cross-sectional area of 7.0×10^{-6} m^2. Find the drift speed of the electrons in the wire. The density of aluminum is 2.7 g/cm^3. (Assume three electrons are supplied by each atom.)

[ ] m/s

3. Question Details SerCP8 17.P.028. [882434]

A wire 3.00 m long and 0.450 mm^2 in cross-sectional area has a resistance of 41 Ω at 20°C. If its resistance increases to 41.3 Ω at 28.0°C, what is the temperature coefficient of resistivity?

[ ] $°C^{-1}$

4. Question Details SerCP8 17.P.034. [882451]

If electrical energy costs 12 cents, or $0.12, per kilowatt-hour, then what would the following events cost?

(a) burning a 100 W light bulb for 24 h straight

$ [ ]

(b) operating an electric oven for 3.0 h if it carries a current of 20.0 A at 220 V

$ [ ]

5. Question Details SerCP8 17.P.042. [882418]

Batteries are rated in terms of ampere-hours (A · h). For example, a battery that can produce a current of 3.00 A for 5.00 h is rated at 15.00 A · h.

(a) What is the total energy stored in a 12.0-V battery rated at 54.0 A · h?

[ ] kWh

(b) At $0.0660 per kilowatt-hour, what is the value of the electricity produced by this battery? NOTE: Enter your response with hundredths precision.

[ ] ¢

6. Question Details SerCP8 17.P.044. [882448]

The cost of electricity varies widely throughout the United States; $0.120/kWh is a typical value. At this unit price, calculate the cost that would result from each of the following:

(a) leaving a 40.0 W porch light on for 2 weeks while you are on vacation

$ [ ]

(b) Making a piece of dark toast in 3.00 min with a 1000 W toaster.

$ [ ]

(c) drying a load of clothes in 40.0 min in a 6000 W dryer

$ [ ]

7. Question Details SerCP8 18.P.005. [882502]

(a) Find the equivalent resistance between points *a* and *b* in the figure below (R = 10.0 Ω).

[ ] Ω

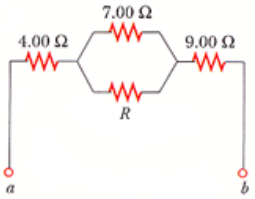
(b) A potential difference of 34.0 V is applied between points *a* and *b*. Calculate the current in each resistor.

I (4.00 Ω) = [ ] A

I (7.00 Ω) = [ ] A

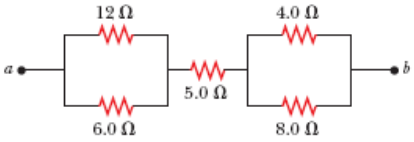
I (10.0 Ω) = [ ] A

I (9.00 Ω) = [ ] A



8. Question Details SerCP8 18.P.006. [920878]

Consider the combination of resistors shown in the figure below.



(a) Find the equivalent resistance between point *a* and *b*.

[ ] Ω

(b) If a voltage of 48.5 V is applied between points *a* and *b*, find the current in each resistor.

12 Ω [ ] A

6 Ω [ ] A

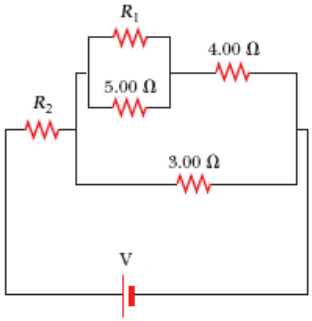
5 Ω [ ] A

4 Ω [ ] A

8 Ω [ ] A

9. Question Details SerCP8 18.P.008. [920921]

Consider the circuit shown in the figure below. Use the following as necessary: R_1 = 8.00 Ω, R_2 = 2.30 Ω, and V = 7.00 V.



(a) Calculate the equivalent resistance of the R_1 and 5.00 Ω resistors connected in parallel.

[ ] Ω

(b) Using the result of part (a), calculate the combined resistance of the R_1, 5.00 Ω, and 4.00 Ω resistors.

[ ] Ω

(c) Calculate the equivalent resistance of the combined resistance found in part (b) and the parallel 3.00 Ω resistor.

[ ] Ω

(d) Combine the equivalent resistance found in part (c) with the R_2 resistor.

[ ] Ω

(e) Calculate the total current in the circuit.

[ ] A

(f) What is the voltage drop across the R_2 resistor?

[ ] V

(g) Subtracting the result of part (f) from the battery voltage, find the voltage across the 3.00 Ω resistor.

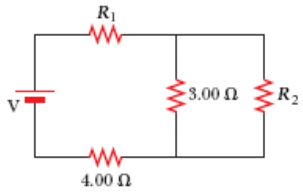
[ ] V

(h) Calculate the current in the 3.00 Ω resistor.

[ ] A

10. Question Details SerCP8 18.P.014. [920914]

For parts (a),(b), and (c) use the figure below. (Use the following as necessary: V = 6.0 V, R_1 = 5.00 Ω, and R_2 = 11.00 Ω.)



(a) Is it possible to reduce the circuit shown in the figure above to a single equivalent resistor connected across the battery? Explain.

(b) Find the current in the 5.00 Ω resistor.

_____ A

(c) Calculate the power delivered by the battery to the circuit.

_____ W

Assignment Details

Name (AID): **Homework #3**
Submissions Allowed: **5**
Category: **Homework**
Code:
Locked: **No**
Author: **Segre, Phil (** psegre@physics.emory.edu **)**
Last Saved:
Permission: **Protected**
Randomization: **Person**
Which graded: **Last**

Feedback Settings
Before due date
Question Score
Assignment Score
Publish Essay Scores
Question Part Score
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Assignment Score
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Solution
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Response