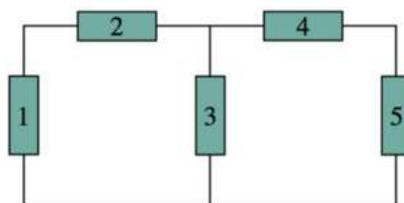


Homework #1

- Write the following in SI engineering format using appropriate SI prefix.
 154.5×10^4 Hz
- How many coulombs are represented by these amounts of electrons?
 6.482×10^{17}
- Find the charge $q(t)$ flowing through a device if the current is:
 $i(t) = (2t + 5)$ mA, $q(0) = 0$
- Figure below shows a circuit with five elements.



If $P_1 = -205$ W, $P_2 = 60$ W, $P_4 = 45$ W, $P_5 = 30$ W, calculate the power P_3 received or delivered by element 3.

- A 1.2-kW toaster takes roughly 4 minutes to heat four slices of bread. Find the cost of operating the toaster once per day for one month (30 days). Assume energy costs 9 cents/kWh.
- A telephone wire has a current of $20 \mu\text{A}$ flowing through it. How long does it take for a charge of 15 C to pass through the wire?
- Find the range in which a resistor having the following color bands must exist to satisfy the manufacturer's tolerance:

	1 st band	2 nd band	3 rd band	4 th band
a) Resistor A	green	blue	yellow	gold
b) Resistor B	red	red	brown	silver
c) Resistor C	grey	black	orange	-----

- Find the conductance of each of the following resistance: $2.2 \text{ M}\Omega$.
- The voltage across a $5\text{-k}\Omega$ resistor is 16 V. Find the current through the resistor.

10. A CD player draws 125 mA when 4.5 V is applied. What is the internal resistance?
11. If a refrigerator draws 2.2 A at 120 V, what is its resistance?
12. What are the internal resistance and voltage rating of a 450 W automatic washer that draws 3.75 A?
13. If 420 J of energy are absorbed by a resistor in 4 min, what is the power to the resistor?
14. Find the hot resistance of a lightbulb rated 60 W, 120 V.
15. When the voltage across a resistor is 120 V, the current through it is 2.5 mA. Calculate its conductance.
16. The table below shows the hours of operation per day for electrical devices available in a commercial office.
- Calculate the total energy used for 30 days in (kWh)
 - Calculate the total monthly bill use the given electricity cost chart.

Device	Power (W)	Operation (hours/day)
Air Condition	8000	20
4xPC Computers	2000	18
Laser Printer	1600	6
Copy Machine	2000	6
Coffee Machine	1500	8
Water Heater	2800	10
Refrigerator	1500	24
Lights	400	20

Electricity cost for commercial building:

kWh	Halalah / kWh
0 - 6000	20
More than 6000	30