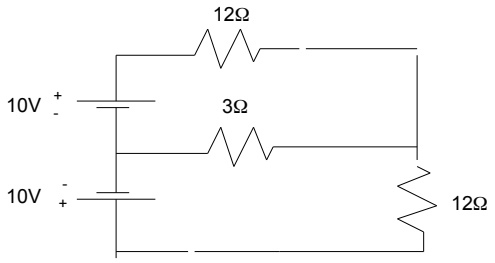

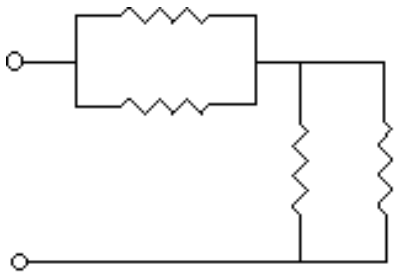

FIG. 1: Figures A, B respectively

1B quiz 2 version A

1. Gold has one electron per atom available as charge carriers. The mass density of gold is $19.3kg/m^3$ and its atomic weight is 197 amu. Find the drift speed of the electrons in a wire with circular cross section of radius $3mm$ and which is carrying a current of carrying $.1A$.

   - a. 1.4 $\times 10^{-4}$ m/s
   - b. 3.7 $\times 10^{-4}$ m/s
   - c. 5.9 $\times 10^{-5}$ m/s
   - d. 2.7 $\times 10^{-2}$ m/s

2. An aluminum wire of length $5L$ and a copper wire of length L have precisely the same resistance. The resistivity of the two materials are: aluminum, $2.8 \times 10^{-8}\Omega - m$ and copper $1.7 \times 10^{-8}\Omega - m$. What is the ratio of the radius of the copper wire to the aluminum wire?

   - a. .05
   - b. .12
   - c. .35
   - d. .87

3. How long is a wire made from a volume 100 cm^3 of copper if its resistance is 8.5 ohms? The resistivity of copper is 1.7 x 10-8 Ω-m.

- a. 7.1 m
- b. 1.7 x 10^2 m
- c. 2.2 x 10^2 m
- d. 3.0 x 10^3 m

4. An electric toaster requires 1 100 W at 110 V. What is the resistance of the heating coil?

   - a. 7.5 Ω
   - b. 9.0 Ω
   - c. 11.0 Ω
   - d. 13.0 Ω

5. To stun its prey, the electric eel generates a current of .8 Amp, applied across a potential difference of 650V. How much energy is deposited by the eel in its victim every 2 seconds?

   - a. 130 J
   - b. 260 J
   - c. 520 J
   - d. 1040 J

6. How much current flows through the central resistor in Fig A shown above?

   - a. .55 A
   - b. .67 A
   - c. .33 A
   - d. 1.11 A

7. The resistors in the circuit shown in Fig B each have a resistance of 100 Ω. What is the equivalent resistance of the circuit?

   - a. 25 Ω

- b. 50 Ω
- c. 75 Ω
- d. 100 Ω

8. A 1 000-V battery, a 3 000-Ω resistor and a 0.50-μF capacitor are connected in series with a switch.The capacitor is initially uncharged. What is the value of the current the moment after the switch is closed?

   - a. 0. A
   - b. .33 A
   - c. .66A
   - d. 3.0 A