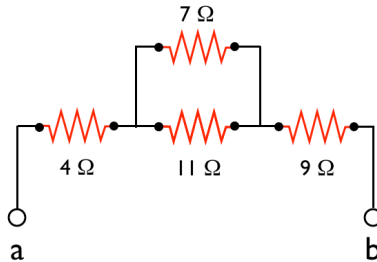


PH 102 Quiz 3: A Mixed Bag

1. A light bulb has a resistance of $230\ \Omega$ when operated at a voltage of $120\ \text{V}$. What is the current in the bulb? Recall $1\ \text{mA} = 10^{-3}\ \text{A}$.

- 1.92 A
 522 mA
 256 mA
 1.04 A

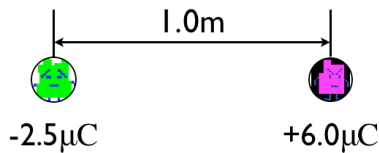


2. What is the equivalent resistance between points a and b ?

- 31.1 Ω
 12.5 Ω
 17.3 Ω
 20.8 Ω

3. A capacitor with air between its plates is charged to $120\ \text{V}$ and then disconnected from the battery. When a piece of glass is placed between the plates, the voltage across the capacitor drops to $30\ \text{V}$. What is the dielectric constant of the glass? (Assume the glass completely fills the space between the plates.)

- 4
 2
 $1/4$
 $1/2$



4. Determine the point (other than infinity) at which the total electric field is zero. This point is not between the two charges.

- 3.5 m to the left of the negative charge
 2.1 m to the right of the positive charge
 1.3 m to the right of the positive charge
 1.8 m to the left of the negative charge

5. A flat surface having an area of $3.2\ \text{m}^2$ is rotated in a uniform electric field of magnitude $E = 5.7 \times 10^5\ \text{N/C}$. What is the electric flux when the electric field is parallel to the surface?

- $1.82 \times 10^6\ \text{N} \cdot \text{m}^2/\text{C}$
 $0\ \text{N} \cdot \text{m}^2/\text{C}$
 $3.64\ \text{N} \cdot \text{m}^2/\text{C}$
 $0.91\ \text{N} \cdot \text{m}^2/\text{C}$