

Question 696

0.23-20%

Three wires are joined together at a junction. A 0.40-A current flows toward the junction from one wire and a 0.3-A current flows away from the junction in the second wire. The current in the third wire is

- (a) 0.10-A, toward the junction.
- (b) 0.70-A, toward the junction.
- (c) 0.10-A, away from the junction.
- (d) 0.70-A, away from the junction.
- (e) 0.30-A, toward the junction.

27-3 Current DensityQuestion 697

27-03

0.41-39%

A cylindrical wire of radius $R = 2.0$ mm has a uniform current density $J = 2.0 \times 10^{(5)}$ A/m². What is the current through the portion of the wire between radial distances $R/3$ and $R/2$? (see figure 1)

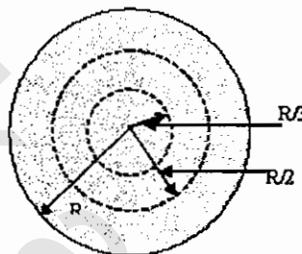


Figure 1

- (a) 0.35 A.
- (b) 5.31 A.
- (c) 1.95 A.
- (d) 3.73 A.
- (e) 9.11 A.

Question 698

27-03

0.45-30%

A conducting wire has a length of 10 m and is made of a material with a resistivity of $1.0 \times 10^{(-8)}$ ohm*m. What is the current density in the wire if the potential difference between its ends is 0.50 V?

- (a) $5.0 \times 10^{(-10)}$ A/(m²)
- (b) $5.0 \times 10^{(-8)}$ A/(m²)
- (c) $5.0 \times 10^{(-9)}$ A/(m²)
- (d) $5.0 \times 10^{(6)}$ A/(m²)
- (e) $5.0 \times 10^{(8)}$ A/(m²)

27-4 Resistance and ResistivityQuestion 699

27-04

0.53-60%

A 10-m long wire has a cross section area of 0.5 mm². The material of the wire has a resistivity of $5.0 \times 10^{(-8)}$ ohm*m at 20 degree-C. A potential difference of 1.0 V is maintained across the ends of the wire. If the resistance changes by 0.3 ohms for a temperature change of 60 C-degree, what is the temperature coefficient of resistivity of this material?

- (a) $7.8 \times 10^{(-4)}$ /C-degree
- (b) $1.7 \times 10^{(-3)}$ /C-degree
- (c) $3.9 \times 10^{(-4)}$ /C-degree
- (d) $5.0 \times 10^{(-3)}$ /C-degree
- (e) $2.5 \times 10^{(-3)}$ /C-degree