

Boylestad - Introductory Circuit Analysis 10e

Tut week 2

SECTION 2.2 Current Page 56

8. Find the current in amperes if 650 C of charge pass through a wire in 50 s.
9. If 465 C of charge pass through a wire in 2.5 min, find the current in amperes.
10. If a current of 40 A exists for 1 min, how many coulombs of charge have passed through the wire?
11. How many coulombs of charge pass through a lamp in 2 min if the current is constant at 750 mA?
12. If the current in a conductor is constant at 2 mA, how much time is required for 4600×10^6 C to pass through the conductor?
13. If 21.847×10^{18} electrons pass through a wire in 7 s, find the current.
14. How many electrons pass through a conductor in 1 min if the current is 1 A?
15. Will a fuse rated at 1 A “blow” if 86 C pass through it in 1.2 min?
- *16. If 0.784×10^{18} electrons pass through a wire in 643 ms, find the current.
- *17. Which would you prefer?
 - a. A penny for every electron that passes through a wire in 0.01 ms at a current of 2mA, or
 - b. A dollar for every electron that passes through a wire in 1.5 ns if the current is 100 mA.
18. What is the voltage between two points if 96 mJ of energy are required to move 50×10^{18} electrons between the two points?
19. If the potential difference between two points is 42 V, how much work is required to bring 6 C from one point to the other?
20. Find the charge Q that requires 96 J of energy to be moved through a potential difference of 16 V.
21. How much charge passes through a battery of 22.5 V if the energy expended is 90 J?
22. If a conductor with a current of 200 mA passing through it converts 40 J of electrical energy into heat in 30 s, what is the potential drop across the conductor?
- *23. Charge is flowing through a conductor at the rate of 420 C/min. If 742 J of electrical energy are converted to heat in 30 s, what is the potential drop across the conductor?
- *24. The potential difference between two points in an electric circuit is 24 V. If 0.4 J of energy were dissipated in a period of 5 ms, what would the current be between the two points?