

ELECTRICITY and CIRCUITS

Chapter 18-19 Assignments and Answers

ASSIGNMENTS:

Ch. 18 During-Chap Assignment:

HW due: _____

Work textbook pg. 515-517 1-2, 4-8, 12-18, 21-22, 26-28, 31-34, 38

Ch. 19 During-Chap Assignment:

HW due: _____

Work textbook pg. 547-551 Problems #1-7, 9, 11-13, 16-21, 35-39, 52a-c

ANSWERS:

Ch. 18 During-Chap Assignment:

- | | |
|--|--------------------------------|
| 1. $8.13E^{18}$ electrons/s | 17. to 42.06°C |
| 2. $1.2E^5$ C | 18. to 363.1°C |
| 4. 29Ω | 21.a. $3.75E^{-4}\Omega$ |
| 5. 950V | b. $1.5E^{-3}\Omega$ |
| 6.a. 16Ω | c. $6E^{-3}\Omega$ |
| b. $6.8E^3$ C | 22. $\sqrt{2}$ |
| 7.a. 25A | 26. 17Ω |
| b. $7.5E^4$ C | 27. 0.96W |
| 8. $2.1E^{21}$ electrons/min | 28. 26V |
| 12. $4.72E^{-4}$ m | 31.b. 17Ω |
| 13. 0.033Ω | c. 12Ω |
| 14. 1.23 | 32. 1/4 as bright |
| 15. Yes, if Tungsten has a big
enough area. $d_{\text{Tungsten}} = 4.56\text{mm}$ | 33. approx. 20 cents/month |
| 16. Cut @ 20% of length. | 34. \$20.81 |
| $R_{\text{short}} = 2\Omega$, $R_{\text{long}} = 8\Omega$ | 38. 15.62W |

Ch. 19 During-Chap Assignment:

- 1.a. 8.41V
b. 8.49V
2. 0.333Ω
- 3.a. 0.048Ω
b. 0.112Ω
4. 0.068Ω
- 5.a. 960Ω
b. 60Ω
- 6.a. 360Ω
b. 9.38Ω
7. 9.26V
- 9.a. 2820Ω
b. 296.9Ω
11. 720Ω, 360Ω, 160Ω, 80Ω
12. 0.407Ω
- 13.a. 13.75V
b. 27.5Ω, 6.875W
16. 960Ω in parallel w/480Ω res.
- 17.a. 841.73Ω
b. 6.7V, 5.3V
18. 105.2Ω
- 19.a-c. These are just your predictions.
d. Before: $I_1 = 0.117A$
 $I_3 = I_4 = 0.059A$
After: $I_1 = 0.132A$
 $I_2 = I_3 = I_4 = 0.044A$
20. 4.55kΩ
- 21.a-c. These are just your predictions.
d. $V = 14.14V$
e. $V = 14.35V$
- 35.a. 28.2μF
b. 0.78 μF
36. Max: parallel = $2.07E^{-8}F$
Min: series = $1.83E^{-9}F$
37. 3.71μF
38. $V_2 = 26V$ $V_3 = 14.9V$ $V_4 = 11.1V$
39. 7326pF, yes it must be broken
- 52.a. 8V
b. 16V
c. 8V