Chapter 43 Even Answers

2. 4.3 eV

4. ~10 K

6. $1.46\times10^{-46}\ \text{kg}\cdot\text{m}^2$

10. $2.72\times10^{-47}\ \text{kg}\cdot\text{m}^2$

12. (a) 0.0118 nm (b) 0.00772 nm; HI is more weakly bound.

14. $(18.4\ \mu\text{eV})J(J+1)$ where $J = 0,\ 1,\ 2,\ 3,\ \ldots$

16. 6.41×10^{13} Hz

18. $\sim10^{17}$ atoms, $\sim10^{5}\ \text{m}^3$

20. 0.444 nm, 0.628 nm, 0.769 nm

24. (a) 1.57×10^{6} m/s

(b) On the order of 10^{10} times greater than the drift speed.

26. 2%

28. 3.40×10^{17} electrons

32. (a) 2.75×10^{14} Hz (b) 1.09 μm (infrared)

34. 1.91 eV

36. 226 nm

38. 4.4 V

40. (a) See solution (b) 10.7 kA

42. (a) $\Delta V = 0$ when $R = 0$ (b) The graph shows a direct proportionality. 0.0232 Ω

(c) possibly expulsion of magnetic flux

44. 37

46. 5.23 J/g

48. 4.74 eV

50. (a) $x_0 = \sqrt{3A/B}$ (b) $U_0 = -2\sqrt{B^3/(27A)}$ (c) $F_{\max} = -B^2/12A$