Chapter 32 Even Answers

2. $1.36\ \mu\text{H}$

4. 7.80×10^{3} turns / m

6. 2.37 mV

8. $19.2\ \mu\text{T}\cdot\text{m}^2$

10. $-\dfrac{\mathcal{E}l}{\mu_0 N^2 A}$

12. (a) $188\ \mu\text{T}$ (b) $3.33\times10^{-8}\ \text{T}\cdot\text{m}^2$ (c) 0.375 mH

(d) B and Φ_B are proportional to current; L is independent of current.

16. $1.92\ \Omega$

20. 92.8 V

22. 30.0 mH

24. 7.67 mH

26. (a) $1.00\ \text{k}\Omega$ (b) 3.00 ms

28. (a) 1.00 A (b) 12.0 V, 1.20 kV, 1.21 kV (c) 7.62 ms

30. (a) See solution (b) See solution

(c) See solution (d) Yes. See solution.

32. (a) $8.06\times10^{6}\ \text{J}/\text{m}^3$ (b) 6.32 kJ

34. (a) 27.8 J (b) 18.5 ms

36. (a) 0.500 J (b) 4.00 W (c) 11.0 W

38. 2.27×10^{-3} T

40. 1.73 mH

42. 80.0 mH

44. 138 nH

46. 781 pH

48. 0.400 A

50. 0.281 H

52. 0.220 H

54. (a) 503 Hz (b) 12.0 μC

(c) 37.9 mA (d) 72.0 μJ

56. (a) 2.51 kHz (b) 69.9 Ω

60. $9t^2 / \pi^2 C$

62. (a) $-LK$ (b) $-Kt^2 / 2C$ (c) $2\sqrt{LC}$

64. (a) See solution (b) 91.2 μH (c) 90.9 μH

66. (a) 127 (b) 0.522 Ω (c) 76.8 mH

68. (a) 20.0 ms (b) 37.9 V

(c) 3.04 mV (d) 104 mA

70. 95.6 mH

72. (a) $I_L = 0, \quad I_C = \frac{\mathcal{E}_0}{R}, \quad I_R = \frac{\mathcal{E}_0}{R}, \quad \Delta V_L = \mathcal{E}_0, \quad \Delta V_C = 0, \quad \Delta V_R = \mathcal{E}_0$

(b) $I_L = I_C = I_R = 0, \quad \Delta V_L = 0, \quad \Delta V_C = \mathcal{E}_0, \quad \Delta V_R = 0$

74. (a) 251 μH (b) 25.1 μH (c) 25.1 nC

76. 3.97×10^{-25} Ω

78. (a) 50.0 mT (b) 20.0 mT

(c) 2.29 MJ (d) 318 Pa