CHAPTER 14 REVIEW

Understanding Concepts

1. Which of the following rows represents the direction of the lines of force for a magnet?

	Inside the Magnet	Outside the Magnet
a)	toward the N pole	toward the N pole
b)	toward the S pole	toward the S pole
c)	do not exist	toward the S pole
d)	toward the N pole	toward the S pole
e)	toward the S pole	toward the N pole

2. Pole X attracts pole Y. Pole Y repels pole Z. Pole Z repels a north pole. Which of the following describes poles X, Y, and Z, respectively?
   a) south, north, north
   b) north, south, south
   c) south, north, south
   d) north, south, north
   e) north, north, north

3. On the side of a current-carrying conductor closest to you the lines of magnetic force are directed straight upward. In which direction is the current?
   a) upward
   b) downward
   c) to the right
   d) to the left
   e) toward you

4. If the direction of the current in a conductor is downward, what is the direction of the magnetic field on the side of the conductor farthest away from you?
   a) upward
   b) downward
   c) to the right
   d) to the left
   e) away from you

5. For which of the diagrams shown in Figure 14.42 is the relation between the directions of the current and the magnetic field correct?

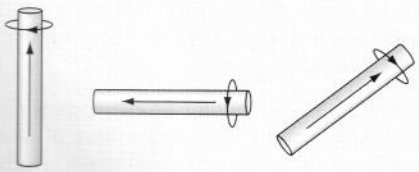

FIGURE 14.42

   a) I only
   b) II only
   c) III only
   d) I and II only
   e) II and III only

6. For which of the helices shown in Figure 14.43 is the north pole at the right?

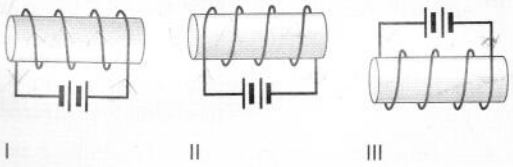

FIGURE 14.43

   a) I, II, and III
   b) I only
   c) II only
   d) III only
   e) none of them

7. For which of the helices shown in Figure 14.44 is the relation between the polarity of the battery and the position of the north pole correct?

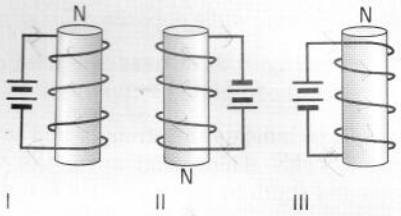

FIGURE 14.44

   a) I only
   b) II only
   c) III only
   d) I and II only
   e) II and III only

8. How is the difference between a strong magnetic field and a weak magnetic field illustrated with lines of force?

9. State the right-hand rule for a straight conductor.

10. Explain the difference between a loop and a helix.

11. Describe three ways for decreasing the strength of an electromagnet.

12. What is a magnetic domain?

13. If an electromagnet can exert a force of 50 N when the current is 1.5 A, what is the force if the current becomes 2.5 A?

14. An electromagnet is created by wrapping 80 turns of wire around an iron nail. When the current is 0.400 A, the electromagnet can exert a maximum force of 2.00 N on a pair of steel pliers. How many turns have to be added (using the same length) to increase the force on the pliers to 8.00 N for the same current and distance?