

Chapter 14

STUDY GUIDE

14.1 MOLECULAR ATTRACTION

Complete the sentence or answer the question.

1. Define the following terms.

- a. polar covalent bond _____

- b. dipole _____

- c. dipole moment _____

2. Are the polar bonds in a polar molecule arranged symmetrically or asymmetrically?

3. What does the dipole moment of a molecule tell us about its intermolecular forces?

4. Indicate whether the following molecules are polar or nonpolar.

- a. BeF_2 _____
- b. H_2O _____
- c. CHCl_3 _____
- d. CCl_4 _____

Write the letter of the term that matches the correct description.

- a. van der Waals forces
b. intramolecular forces
c. intermolecular forces
d. dipole-dipole forces
e. dipole-induced dipole forces
f. temporary dipole
g. dispersion forces
h. induced dipole

- ___ 5. a nonpolar molecule in which the charge distribution is briefly asymmetrical
- ___ 6. a nonpolar molecule that has its electron cloud distorted by an approaching dipole and is thus transformed into a dipole
- ___ 7. weak forces involving the attraction of the electrons of one atom for the protons of another
- ___ 8. attractive forces between two molecules of the same or different substances that are both permanent dipoles
- ___ 9. forces generated by temporary dipoles

- ___ 10. forces between molecules
- ___ 11. attractive forces between dipoles and nonpolar molecules
- ___ 12. forces within a molecule

Write T for true and F for false. If a statement is false, replace the underlined word or phrase with one that will make the statement true, and write your correction on the blank provided.

- _____ 13. Dispersion forces are the only attractive forces that attract between nonpolar molecules.
- _____ 14. Molecules cannot exhibit both dipole and dispersion interactions.
- _____ 15. Substances composed of nonpolar molecules are generally gases at room temperature or high-boiling liquids.
- _____ 16. Substances composed of polar molecules generally have higher boiling points than do nonpolar compounds.
- _____ 17. A nonpolar molecule can have polar bonds.
- _____ 18. Water is a nonpolar molecule that has polar bonds.