

Chapter 14

STUDY GUIDE

14.1 MOLECULAR ATTRACTION

Complete the sentence or answer the question.

1. Define the following terms.

- a. polar covalent bond a covalent bond where the more electronegative atom attracts the shared e^- more
- b. dipole molecule or atom with a positive + negative side (poles)
- c. dipole moment the strength of a dipole

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

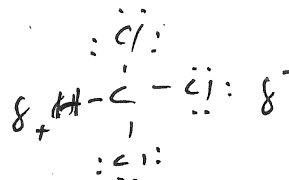
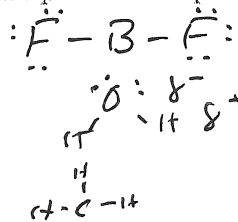
asymmetrically - need the molecule to have poles

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

the higher the dipole moment the stronger the intermolecular bonds

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

- a. BeF_2 NP
- b. H_2O P
- c. CHCl_3 P
- d. CCl_4 NP



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

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

- c 10. forces between molecules
e 11. attractive forces between dipoles and nonpolar molecules
b 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.

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

