

7.2

IONIC BONDS AND IONIC COMPOUNDS

Section Review

Objectives

- Explain the electrical charge of an ionic compound
- Describe three properties of ionic compounds

Vocabulary

- ionic compounds
- ionic bonds
- chemical formula
- formula unit
- coordination number

Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

- Anions and cations attract one another by means of 1. 1. _____
- The forces of attraction that hold 2 charged ions together in 2. _____
ionic compounds are called 3. Although they are composed 3. _____
of ions, ionic compounds are electrically 4. The lowest whole- 4. _____
number ratio of ions in an ionic compound is called a 5. 5. _____
- Nearly all ionic compounds are solid 6 at room 6. _____
temperature. Ionic compounds in general have very 7 7. _____
melting temperatures. This is because the 8 attractive 8. _____
forces between the ions result in a very 9 structure. 9. _____
- Ionic compounds conduct an electric current when in the 10. _____
10 state or dissolved in water.

Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

- _____ 11. During the formation of the compound NaCl, one electron is transferred from a sodium atom to a chlorine atom.

- _____ 12. The coordination number of an ion is the number of ions of positive charge that surround the ion in a crystal.
- _____ 13. The coordination number of the ion Na^+ in NaCl is 6.
- _____ 14. In forming an ionic compound, an atom of an element gains electrons.
- _____ 15. Ionic compounds cannot conduct electricity if they are dissolved in water.

Part C Matching

Match each description in Column B to the correct term in Column A.

Column A	Column B
_____ 16. ionic compounds	a. the number of ions of opposite charge surrounding each ion in a crystal
_____ 17. ionic bonds	b. compounds composed of cations and anions
_____ 18. chemical formula	c. shows the kinds and numbers of atoms in the smallest representative unit of a substance
_____ 19. formula unit	d. lowest whole-number ratio of ions in an ionic compound
_____ 20. coordination number	e. the electrostatic forces of attraction binding oppositely charged ions together

Part D Questions and Problems

Answer the following in the space provided.

21. List the characteristics of an ionic bond.

22. Explain the electrical conductivity of melted and of aqueous solutions of ionic compounds using the characteristics of ionic compounds.
