

7 IONIC AND METALLIC BONDING

Vocabulary Review

Match the correct vocabulary term to each numbered statement. Write the letter of the correct term on the line.

Column A

Column B

- | | |
|---|---------------------------|
| <u>j</u> 1. compounds composed of cations and anions | a. chemical formula |
| <u>i</u> 2. the attraction of free-floating valence electrons for positively charged metal ions | b. valence electrons |
| <u>f</u> 3. the lowest whole-number ratio of ions in an ionic compound | c. electron dot structure |
| <u>g</u> 4. the electrostatic attraction that binds oppositely charged ions together | d. octet rule |
| <u>h</u> 5. the number of ions of opposite charge that surround the ion in a crystal | e. halide ion |
| <u>l</u> 6. negatively charged ions | f. formula unit |
| <u>a</u> 7. shows the kinds and numbers of atoms in the smallest representative unit of a substance | g. ionic bonds |
| <u>c</u> 8. a diagram that shows valence electrons as dots | h. coordination number |
| <u>e</u> 9. a negative ion formed when a halogen atom gains an electron | i. metallic bonds |
| <u>d</u> 10. In forming compounds, atoms tend to react so as to acquire the stable electron configuration of a noble gas. | j. ionic compounds |
| <u>b</u> 11. electrons in the highest occupied energy level of an element's atoms. | k. alloy |
| <u>k</u> 12. a mixture of two or more elements, at least one of which is a metal | l. anions |
| <u>m</u> 13. positively charged ions | m. cations |

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STURMAN
key

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Chapter Quiz

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

- | | |
|--|-----|
| <u>ST</u> 1. When a metal atom in a metal crystal has 12 neighbors, the arrangement is a face-centered cube. | 7.3 |
| <u>NT</u> 2. The chlorine atom gains seven electrons when it becomes an ion. | 7.1 |
| <u>AT</u> 3. Ionic compounds conduct electricity better in the molten state than in the solid state. | 7.2 |
| <u>AT</u> 4. During the formation of the compound NaCl, one electron is transferred from a sodium atom to a chlorine atom. | 7.2 |
| <u>AT</u> 5. A piece of metal consists of closely packed cations surrounded by mobile valence electrons. | 7.3 |

Fill in the word(s) that will make each statement true.

- | | |
|---|-----------------------------|
| 6. The electrons in the highest occupied energy level of an atom are called the <u>6</u> electrons. | 6. <u>Valence</u> 7.1 |
| 7. The <u>7</u> rule states that atoms in compounds tend to have the electron configuration of a noble gas. | 7. <u>octet</u> 7.1 |
| 8. An oxygen atom attains a stable electron configuration by <u>8</u> two electrons. | 8. <u>gaining</u> 7.1 |
| 9. Atoms and ions with <u>9</u> electrons in their highest energy levels are very stable. | 9. <u>eight</u> 7.1 |
| 10. Silver forms a cation by attaining a <u>10</u> electron configuration with 18 outer electrons including <u>d</u> electrons. | 10. <u>pseudo-noble gas</u> |
| 11. <u>11</u> tend to lose electrons when they react to form compounds. | 11. <u>metals</u> 7.1 |
| 12. An <u>12</u> is any atom or group of atoms with a negative charge. | 12. <u>anions</u> 7.1 |
| 13. The lowest whole-number ratio of ions in an ionic compound is known as a <u>13</u> . | 13. <u>formula unit</u> 7.1 |

(9)