Ionic and Metallic Bonds
(Chapter 11, section 3)

Name _____
Period _____

1. An _____ is an atom or group of atoms that has an electric charge because it has lost or gained valence electrons.

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2. a) Why do atoms that gain electrons become ions with a negative charge?

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   b) Why do atoms that lose electrons become ions with a positive charge?

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3. a) What is a polyatomic ion? Research using your computer.

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   b) Give two examples of polyatomic ions (name and symbol).

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4. a) When do metal atoms become more stable?

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   b) Using sodium as an example, explain why.

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5. a) When do nonmetal atoms become more stable?

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   b) Using chlorine as an example, explain why.

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6. a) Table salt is an ionic compound. What is its chemical formula?

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   b) Which is the positive ion and which is the negative ion?

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   c) How did this happen?

7. An _____ is a compound that is made up of positive and negative ions.

8. An _____ is the attraction between two oppositely charged ions.

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9. What are general properties of ionic compounds?

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10. a) Between what kinds of atoms do **covalent** bonds usually form?

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    b) Between what kinds of atoms do **ionic** bonds usually form?

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11. a) A _____ is a bond formed by the attraction between positively charged metal ions and the pool of valence electrons surrounding them.

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    b) Diagram the pooling of valence electrons in aluminum. **Label** the positive aluminum ions and the negative valence electrons. (**Note** that the negative signs (-) only represent valence electrons, not all of the aluminum atoms' electrons.)

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12. What are general properties of metallic compounds?

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13. How does valence electron pooling explain why metals are good conductors of electricity, malleable and ductile, and shiny?

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14. What is an alloy? Research using your computer.

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15. How do the physical and chemical properties of an alloy compare to those of its individual elements?