

Self-test: Chemical Bonding (CH 13)**Completion**

Complete each statement.

1. Atoms that do not easily lose electrons form _____.
2. When atoms gain or lose electrons, charged particles called _____ are formed.
3. An interaction that holds two atoms together is called a(n) _____.
4. An electron that is in the outermost shell of an atom is a(n) _____.
5. Neutral atoms covalently bonded together form a(n) _____.
6. The bond formed by the attraction between positively charged metal ions and the electrons around them is a(n) _____.
7. The number of protons in an atom is its _____.
8. On the periodic table, atoms in the same _____ have the same number of valence electrons.
9. An electron in the outermost level of an atom is a(n) _____.
10. If a sodium atom loses its only valence electron, it becomes a(n) _____.
11. For electrons to pull away from atoms, _____ is needed.
12. When atoms lose electrons in an ionic bond, they become _____ charged.
13. Elements that are found in nature as diatomic molecules are called _____.
14. In order to make the overall charge of an atom zero, there must be an equal number of protons and _____.
15. An atom will not normally form a chemical bond if it has _____ valence electrons.
16. In a covalent bond, neither atom loses or gains an electron. Instead, one or more electrons are _____ by the atoms.

Short Answer

17. Explain how an oxide ion is formed.

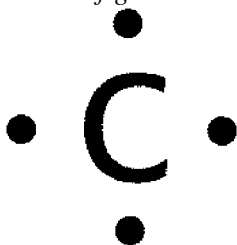
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18. Name three properties of a crystal lattice.
19. Draw electron (Lewis) dot diagrams for the following atoms: hydrogen, magnesium, fluorine, and carbon.
20. What is a diatomic molecule? Give an example.
21. Why is it possible to shape metal?
22. What is the joining of atoms to form new substances called?
23. Why do some atoms rarely bond?
24. How does an atom become an ion?
25. What is a crystal lattice?
26. What is the smallest particle of a covalently bonded compound?
27. List three common materials that contain covalent bonds.
28. Why can metals conduct electric current?
29. Explain how you can use the periodic table to find the number of valence electrons for an element.
30. Explain why the noble gases do not normally form chemical bonds.
31. How would an atom of oxygen fill its outermost energy level?

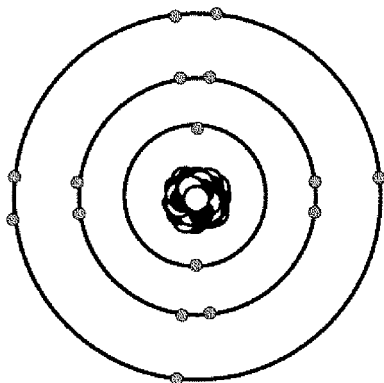
32. Why does helium need only two valence electrons to have a filled outermost energy level?
33. Name and define the 3 types of chemical bonds.
34. List three properties of ionic compounds.
35. List three properties of substances that have covalent bonds.
36. What three properties of metals are a result of metallic bonding?

Use the figure below to answer the following question.



37. Explain how many valence electrons this atom has and how many are needed to have a filled outer energy level.

Use the figure below to answer the following question.



38. Above is a sulfur atom. Explain how many valence electrons it has and how it can complete its outer energy level.

Matching

Match each item with the correct statement below.

- | | |
|---------------------|------------------|
| a. noble gases | c. atomic number |
| b. valence electron | d. chemical bond |

- _____ 39. the number of protons in an atom
_____ 40. an interaction that holds two atoms together
_____ 41. an electron in the outermost energy level of an atom
_____ 42. elements that have 8 valence electrons and normally do not form chemical bonds

Match each item with the correct statement below.

- | | |
|-------------------------|------------------|
| a. metallic bond | d. covalent bond |
| b. electron-dot diagram | e. molecule |
| c. diatomic molecule | f. malleability |

- _____ 43. bond that forms when atoms share one or more pairs of electrons
_____ 44. smallest unit of a substance that still keeps the properties of the substance
_____ 45. model used to show the valence electrons of an atom
_____ 46. molecules made of two atoms
_____ 47. bond formed by the attraction between positively charged metal ions and the electrons around them
_____ 48. ability of metal to be hammered into sheets