

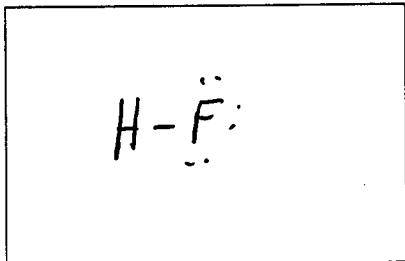
## Chapter 6 Quiz

25**Multiple Choice***Identify the choice that best completes the statement or answers the question.*

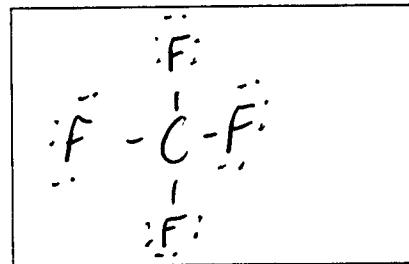
- D 1. The electrons involved in the formation of a chemical bond are called  
 a. dipoles.      b. Lewis electrons.      c. s electrons.      d. valence electrons.
- A 2. If two covalently bonded atoms are identical, the bond is  
 a. nonpolar covalent.      b. dipole covalent.      c. polar covalent.      d. coordinate covalent.
- B 3. What are shared in a covalent bond?  
 a. ions      b. electrons      c. Lewis structures      d. dipoles
- C 4. The B—F bond in  $\text{BF}_3$  (electronegativity for B is 2.0; electronegativity for F is 4.0) is  
 a. polar covalent.      b. nonpolar covalent.      c. ionic.      d. metallic.
- C 5. The electron configuration of nitrogen is  $1s^2 2s^2 2p^3$ . How many more electrons does nitrogen need to satisfy the octet rule?  
 a. 1      b. 5      c. 3      d. 8
- C 6. What group of elements satisfies the octet rule without forming compounds?  
 a. halogen      b. alkali metal      c. noble gas      d. alkaline-earth metal
- C 7. Use VSEPR theory to predict the shape of the hydrogen chloride molecule, HCl.  
 a. tetrahedral      b. bent      c. linear      d. trigonal-planar
- D 8. Use VSEPR theory to predict the shape of the chlorate ion,  $\text{ClO}_3^-$ .  
 a. trigonal-planar      b. bent      c. octahedral      d. trigonal-pyramidal
- C 9. Use VSEPR theory to predict the shape of carbon dioxide,  $\text{CO}_2$ .  
 a. tetrahedral      b. bent      c. linear      d. octahedral
- C 10. When atoms share electrons, the electrical attraction of an atom for the shared electrons is called the atom's  
 a. electron affinity.      b. resonance.      c. electronegativity.      d. hybridization.
- C 11. If the atoms that share electrons have an unequal attraction for the electrons, the bond is called  
 a. nonpolar.      b. ionic.      c. polar.      d. dipolar.
- B 12. In the three molecules,  $\text{O}_2$ , HCl, and  $\text{F}_2$ , what atom would have a partial negative charge?  
 a. oxygen      b. chlorine      c. hydrogen      d. fluorine
- A 13. To draw a Lewis structure, one must know the  
 a. number of valence electrons in each atom.      c. atomic mass of each atom.  
 b. bond length of each atom.      d. ionization energy of each atom.

Give the Lewis Structure for each of the following:

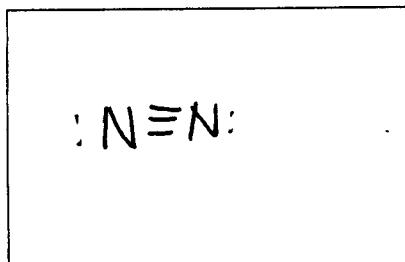
14. HF



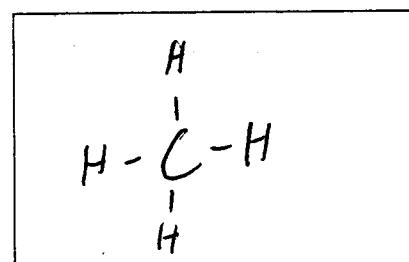
17. CF<sub>4</sub>



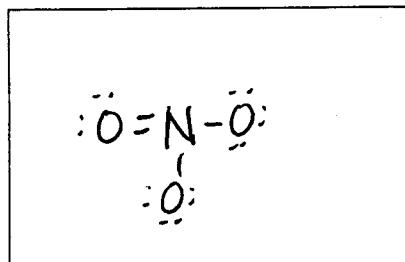
15. N<sub>2</sub>



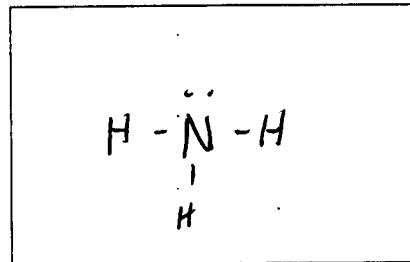
18. CH<sub>4</sub>



16. NO<sub>3</sub><sup>-1</sup>



19. NH<sub>3</sub>



On the basis of electronegativities, indicate whether each of the following bonds would be ionic, covalent, or polar covalent bonds: S=2.5, H=2.1, O=3.5, K=0.9

20. S-S Covalent

22. S-H Covalent

21. S-O polar covalent

23. S-K ionic or polar covalent

Give the total number of valence electrons in each of the following molecules.

24. CBr<sub>4</sub> 32

26. C<sub>6</sub>H<sub>6</sub> 30

25. NO<sub>2</sub> 17

27. H<sub>2</sub>O<sub>2</sub> 14