

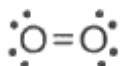
1. Which statement describes a multiple covalent bond?

- A) Two electrons are shared.
- B) Four electrons are shared.
- C) Two electrons are transferred.
- D) Four electrons are transferred.

2. What is the total number of electrons shared in a double covalent bond?

- A) 1      B) 2      C) 3      D) 4

3. Given a formula for oxygen:



What is the total number of electrons shared between the atoms represented in this formula?

- A) 1      B) 2      C) 8      D) 4

4. As a bond between a hydrogen atom and a sulfur atom is formed, electrons are

- A) shared to form an ionic bond
- B) shared to form a covalent bond
- C) transferred to form an ionic bond
- D) transferred to form a covalent bond

5. What is the total number of electrons shared in the bonds between the two carbon atoms in a the molecule shown below?



- A) 6      B) 2      C) 3      D) 8

6. Which compound contains only covalent bonds?

- A) NaOH                      B) Ba(OH)<sub>2</sub>
- C) Ca(OH)<sub>2</sub>                  D) CH<sub>3</sub>OH

7. Which type of chemical bond is formed between two atoms of bromine?

- A) metallic                  B) hydrogen
- C) ionic                      D) covalent

8. Which formula represents a compound that is formed primarily by sharing electrons?

- A) KCl                      B) CaCl<sub>2</sub>
- C) CrCl<sub>3</sub>                    D) CCl<sub>4</sub>

9. In which compound do atoms form bonds by sharing electrons?

- A) H<sub>2</sub>O    B) Na<sub>2</sub>O    C) CaO    D) MgO

10. Which pair of atoms will share electrons when a bond is formed between them?

- A) Ba and I                  B) Br and Cl
- C) K and Cl                 D) Li and I

11. Which atoms are most likely to form covalent bonds?

- A) metal atoms that share electrons
- B) metal atoms that share protons
- C) nonmetal atoms that share electrons
- D) nonmetal atoms that share protons

12. Which type of bond is formed between the two chlorine atoms in a chlorine molecule?

- A) polar covalent          B) metallic
- C) nonpolar covalent      D) ionic

13. Which combination of atoms can form a polar covalent bond?

- A) H and H                  B) H and Br
- C) N and N                 D) Na and Br

14. Which type of bond is present in a water molecule?

- A) polar covalent          B) nonpolar covalent
- C) ionic                      D) electrovalent

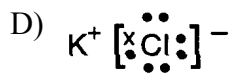
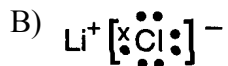
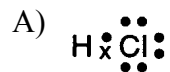
15. Which molecule contains a polar covalent bond?

- A)  $\begin{array}{c} \times\times \\ \times\text{I}\times\text{I} \\ \times\times \end{array}$                   B)  $\text{H}\times\text{H}$
- C)  $\begin{array}{c} \times \\ \text{H}\times\text{N}\times\text{H} \\ \times \\ \text{H} \end{array}$                   D)  $:\text{N}\times\times\text{N}\times$

16. What type of bond exists in a molecule of hydrogen iodide?

- A) a polar covalent bond with an electronegativity difference of zero
- B) polar covalent bond with an electronegativity difference between zero and 1.7
- C) a nonpolar covalent bond with an electronegativity difference of zero
- D) a nonpolar covalent bond with an electronegativity difference between zero and 1.7

17. Which electron-dot diagram represents a molecule that has a polar covalent bond?



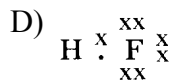
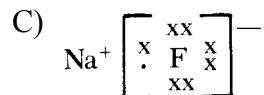
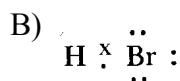
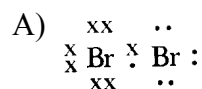
18. The bonds between hydrogen and oxygen in a water molecule are classified as

- A) polar covalent      B) nonpolar covalent  
C) ionic                  D) metallic

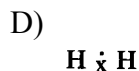
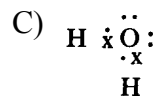
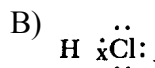
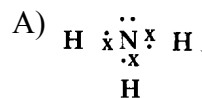
19. Which substance is correctly paired with its type of bonding?

- A) NaBr–nonpolar covalent  
B) HCl–nonpolar covalent  
C) NH<sub>3</sub>–polar covalent  
D) Br<sub>2</sub>–polar covalent

20. Which electron-dot formula represents a molecule that contains a nonpolar covalent bond?



21. Which molecule contains a nonpolar covalent bond?



22. Which type of bond is formed between the carbon and oxygen atoms in a CO<sub>2</sub> molecule?

- A) nonpolar covalent    B) polar covalent  
C) ionic                  D) electrovalent

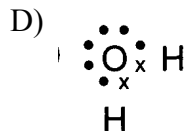
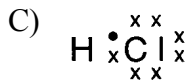
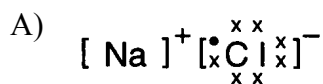
23. A chemist performs the same tests on two homogeneous white crystalline solids, *A* and *B*. The results are shown in the table below.

	Solid A	Solid B
Melting Point	High, 801°C	Low, decomposes at 186°C
Solubility in H <sub>2</sub> O (grams per 100.0 g H <sub>2</sub> O at 0°C)	35.7	3.2
Electrical Conductivity (in aqueous solution)	Good conductor	Nonconductor

The results of these tests suggest that

- A) both solids contain only ionic bonds
- B) both solids contain only covalent bonds
- C) solid *A* contains only covalent bonds and solid *B* contains only ionic bonds
- D) solid *A* contains only ionic bonds and solid *B* contains only covalent bonds

24. Which electron-dot formula represents a substance that contains a nonpolar covalent bond?



25. Which substance contains nonpolar covalent bonds?

- A) H<sub>2</sub>
- B) H<sub>2</sub>O
- C) Ca(OH)<sub>2</sub>
- D) CaO