

Something bonderful

Name _____

A. metallic solid B. ionic solid C. molecular solid D. covalent network solid

_____ 1. Gold

_____ 2. Barium bromide

_____ 3. Conduct electricity in the liquid, but NOT the solid state

_____ 4. Very good electrical conductors in the solid state

_____ 5. Diamonds and graphite

_____ 6. Generally have lower melting points than the other types of solid

_____ 7. Consist of an array of positively charged and negatively charged particles that are strongly attracted to each other

_____ 8. May be held together by hydrogen bonds.

A. H₂S B. CO₂ C. KF D. HBr

_____ 9. A linear molecule that is NOT a dipole

_____ 10. A linear molecule that IS a dipole

_____ 11. A non-linear molecule that is a dipole

_____ 12. Has the highest melting point of these substances

_____ 13. The best description of the bonds in an N₂ molecule is

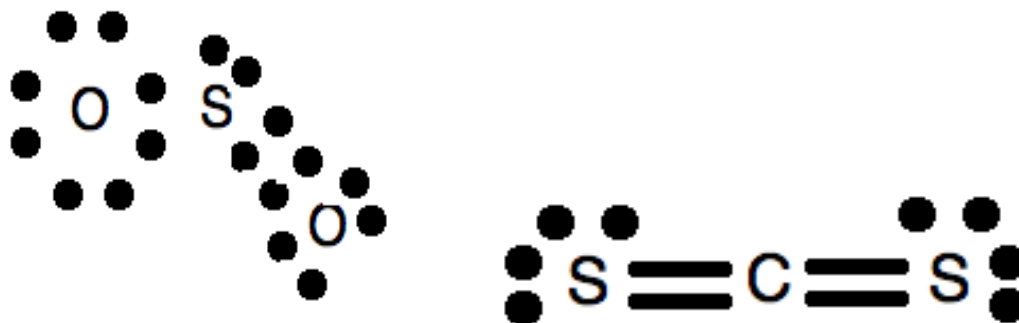
A) polar covalent, triple bonds B) polar covalent, single bonds

C) nonpolar covalent, triple bonds D) nonpolar covalent, single bonds

_____ 14. Which molecule has the strongest London dispersion forces?

A) O₂ B) Cl₂ C) F₂ D) I₂

_____ 15. The reaction $\text{H}_2 \rightarrow 2 \text{H}$ involves bond breaking. The bond that breaks in this reaction is called A) a hydrogen bond B) a polar covalent bond C) a nonpolar covalent bond D) a metallic bond



Base your answers to questions 16 - 18 on the two molecules illustrated above, which have been drawn to show their correct geometries.

- _____ 16. Based on these diagrams A) both molecules are dipoles
 B) neither molecule is a dipole C) SO_2 is a dipole, but CS_2 is not a dipole
 D) CS_2 is a dipole, but SO_2 is not a dipole
- _____ 17. The double line that connects the carbon with a sulfur atom represents
 A) 4 electrons B) 2 electrons C) an ionic bond D) a London force
- _____ 18. The SO_2 molecule contains A) two double bonds
 B) one single bond and one double bond
 C) one double bond and one quadruple bond
 D) four single bonds
- _____ 19. Hydrogen bonding explains the relatively high boiling point of
 A) CH_4 B) HI C) CO_2 D) HF
- _____ 20. The phrase "sea of mobile electrons " is associated with
 A) ionic bonds B) covalent bonds C) hydrogen bonds D) metallic bonds
- _____ 21. Which bond is the most highly polar? A) C-H B) Cl-F
 C) H-F D) S-O

22. Draw the dot structures of the following molecules:

- A. CO_2 B. CBr_4 C. PH_3

23. Draw a diagram that shows the hydrogen bonding in liquid water. Be sure to label the hydrogen bond(s).

24. Nitrogen forms a compound with iodine called nitrogen triiodide, NI_3

The compound has the same geometry as ammonia.

A. Draw the dot structure of NI_3

B. Is this molecule a dipole? Explain your answer.

C. One of the atoms in NI_3 acquires a slight negative charge. Which atom is slightly negative? Explain how you know.

Extra Credit: Draw the dot structure of a sulfite ion. (See table E)

II. What is the total number of "dots" that should be shown in the dot structure of a carbonate ion? (See table E)