**Chemistry** **Name**_____
**Test: Covalent Bonding**

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

1. The force that holds atoms together is referred to as a _____.
   a. cation b. chemical bond c. formula unit d. lattice

2. A covalent bond occurs when atoms _____ electrons.
   a. share b. transfer

3. Compounds that contain covalent bonds have _____ melting points.
   a. high b. low

4. Which type of bond has one pair of electrons shared between atoms?
   a. single covalent b. single ionic c. double covalent d. double ionic

5. Water is a _____ substance.
   a. polar b. nonpolar c. ionic

6. Chlorine is a diatomic molecule. Chlorine is _____ molecule.
   a. polar b. nonpolar

7. A double covalent bond occurs when two atoms share _____ electrons.
   a. 1 b. 2 c. 3 d. 4

11. Which of the following elements has the highest electronegativity?
    a. bromine b. chlorine c. fluorine d. iodine

12. A covalent bond in which the electrons are shared equally is classified as _____.
    a. polar b. nonpolar c. ionic

14. Covalently bonded molecules consist of a nonmetal bonded to a _____.
    a. metal b. nonmetal

15. Covalently bonded molecules conduct electricity in the liquid state.
    a. true b. false

16. Atoms form covalent bonds in an attempt to have an outer level that contains _____ electrons.
a. 0 b. 4 c. 6 d. 8

17. Hydrogen is an exception to the octet rule and is stable when it has _____ electrons in the outer energy level.
a. 0 b. 1 c. 2 d. 3

18. Which of the following elements does NOT exist as a diatomic molecule?
a. hydrogen b. oxygen c. carbon d. nitrogen

Answer questions 19-21 about the element **carbon.**

19. An atom of carbon has _____ valence electrons.
a. 2 b. 4 c. 6 d. 8

20. How many single covalent bonds can an atom of carbon form?
a. 1 b. 2 c. 3 d. 4

21. A diatomic oxygen molecule forms what type of bond?
a. single b. double c. triple d. all of the above

22. Which covalent molecule shown below has the strongest bond?

A) F−F b) N≡N c) O=O

24. A molecule is formed when two or more atoms form a covalent bond. According to this definition, which of these is NOT a molecule?
a. NaCl b. $H_2$ c. HCl d. $NH_3$

25. The bond that holds two fluorine atoms together in an $F_2$ molecule would be classified as nonpolar covalent because _____.
a. both atoms are different and the difference in electronegativity is large.
b. both atoms are different and the difference in electronegativity is zero.
c. both atoms are the same and the difference in electronegativity is large.
d. both atoms are the same and the difference in electronegativity is zero.

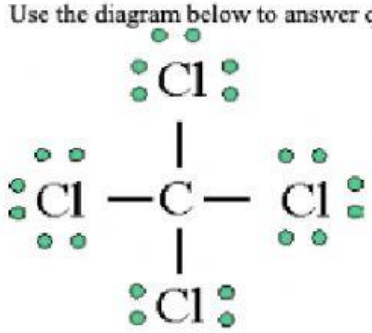
27. Which of the following is the correct name for the compound $N_2O_3$?
    a. nitrogen oxide  b. nitrogen trioxide  c. trinitrogen dioxide  d. dinitrogen trioxide

28. Which of the following is the correct name for the compound $PCl_5$?
    a. monophosphorus tetrachloride  c. phosphorus pentachloride
    b. phosphorus chloride  d. pentaphosphorus chloride

29. Which is the correct formula for the compound dinitrogen monoxide?
    a. $NO_2$  b. $(NO)_2$  c. $N_2O_1$  d. $N_2O$

30. Which is the correct formula for the compound sulfur hexachloride?
    a. $S_6Cl$  b. $SCl_6$  c. $SCl_5$  d. $S_2Cl_3$

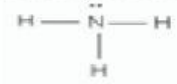
Use the diagram below to answer questions 31-34




32. The bonds in the molecule represented above are _____.
    a. polar  b. nonpolar  c. ionic

34. The name of the compound represented by the diagram above is _____.
    a. carbon chloride  c. carbon tetrachloride
    b. monocarbon tetrachloride  d. tetrachlorine monocarbide

Use the diagram below to answer questions 35-38.




36. The bonds in the molecule represented above are _____.
    a. polar  b. nonpolar  c. ionic

38. The name of the compound represented by the diagram above is _____.
    a. nitrogen hydride
    b. hydrogen nitride
    c. nitrogen trihydride
    d. mononitrigen trihydride

Directions: Match the formulas with the correct names.

43. $S_8O_5$
44. $S_3O_4$
45. $S_6O_7$

a. trisulfur tetraoxide
b. hexasulfur heptaoxide
c. octasulfur pentoxide

Directions: Match the names with the correct formula.

46. Disilicon tetrachloride
47. Trinitrogen hexafluoride
48. Pentabromine heptachloride

a. $N_3F_6$
b. $Br_5Cl_7$
c. $Si_2Cl_4$