Name: KEY

Unit 9 Group Practice

Multiple choice (2 points each):

1. An ionic bond usually forms between _____

D A. any two atoms. B. two metals.
C. two nonmetals. (D) a metal and a nonmetal.

2. Which of the following would contain metallic bonds?

C A. magnesium oxide B. water (C) tin = Sn D. salt

3. Which of the following would contain a nonpolar covalent bond?

A (A) Br_2 = diatomic B. $MgCO_3$ C. Al D. CO_2

4. What type of bond would occur between nitrogen and fluorine?

C A. ionic B. nonpolar covalent (C.) polar covalent D. metallic

5. Which of the following is characteristic of ionic compounds?

A (A) Mostly solids at room temperature B. Do not conduct electricity in aqueous solution
C. Low melting points D. Very malleable

6. At room temperature covalent bonds exist as_____.

D A. solids B. liquids C. gases (D) solids, liquids, OR gases

7. When potassium and sulfur react to form ionic bonds, how many potassium atoms are needed to form a neutral compound?

B A. 1 (B) 2 C. 3 D. 4 ↳ K_2S

8. Why do atoms share electrons in covalent bonds?

B A. To become ions and attract each other.
(B) To become stable by attaining a noble gas electron configuration.
C. To become more polar.
D. To increase their atomic numbers.

9. What type of bond exists between two oxygen atoms (O_2)?

C A. Ionic B. Polar covalent (C.) Nonpolar covalent D. Dipolar covalent

10. Which of the following compounds would be considered covalent?

D A. NaCl B. $AlPO_4$ C. Li_2O (D) SO_3 = NM + NM

11. Which of the following is NOT characteristic of covalent compounds?

D A. Can be solids, liquids, or gases at room temperature
B. Do not conduct electricity in aqueous solution
C. Sometimes dissolves in water
(D) High melting points

12. If the central atom has lone pairs, the molecule is _____.

A. bipolar (B.) polar C. reactive D. nonpolar

B

$\ddot{O}=C=\ddot{O}$

13. The carbon dioxide molecule, CO_2, contains _____ and is a _____.

A (A) polar bonds, nonpolar molecule B. nonpolar bonds, nonpolar molecule
C. polar bonds, polar molecule D. nonpolar bonds, polar molecule

14. The methane molecule, CH_4, is a _____ overall.

B A. polar molecule (B.) nonpolar molecule C. crazy molecule D. ionic molecule

15. HCN is a _____ and has a _____ shape.

A. nonpolar molecule; linear
B (B) polar molecule; linear
C. nonpolar molecule; bent
D. polar molecule; bent

H—C≡N:

16. All diatomic molecules have a _____ shape.

A (A) linear B. bent C. trigonal planar D. trigonal pyramidal

17. The VSEPR theory states that electrons tend to _____.

A (A) repel and spread as far from each other as possible
B. attract and get as close to each other as possible
C. repel and spread out to form 45 degree angles
D. attract and form bonds

18. Which of following describes the bonds in metals?

B A. transfer of electrons
(B) sea of electrons
C. sharing of electrons
D. falling of electrons

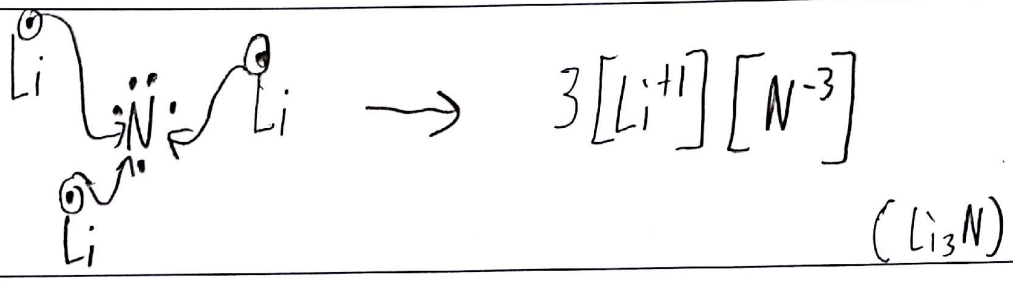
19. Which of the following molecule is nonpolar?

C A. NaCl
B. H_2O
(C) C_2H_6 = hydrocarbons => ALWAYS NP
D. Fe

20. Which of the following is linear and nonpolar?

D A. HCl
B. CO
C. LiF
(D) O_2
↳ diatomics = linear & NP

Complete the following table (10 points each)

	Show the electron transfer for the following ionic compounds. Make sure to also show the final product.
21. **Mg + O**	
22. **Li + N**	

For the following below: First write out the formula for each, NASL the molecule, draw the Lewis dot structure, determine its shape, and determine if the overall molecule is POLAR or NONPOLAR. *(10 pts. each)*

23. Carbon monoxide = CO

8+8=16

4+6=10

=6→3

=4→2

Shape: linear

Polar or Nonpolar?

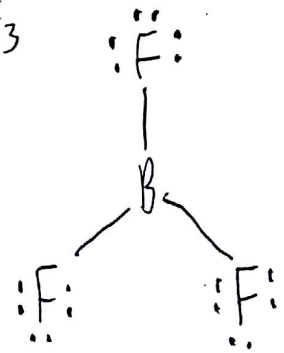
24. Boron trifluoride = BF_3

6+3(8)=30

3+3(7)=24

=6→3

=18→9



Shape: Trigonal Planar

Polar or Nonpolar?

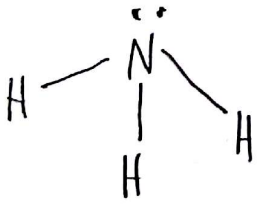
25. Ammonia = NH_3

8+3(a)=14

5+3(1)=8

=6→3

=2→1



Shape: Trigonal Pyramidal

Polar or Nonpolar?

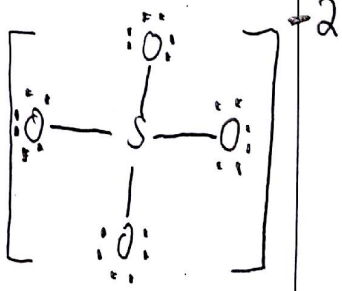
26. Sulfate ion = SO_4^{-2}

8+4(8)=40

6+4(6)+2=32

=8→4

=24→12



Shape: Tetrahedral

Polar or Nonpolar?