Background:

	Electron negativity:
	N.
	Note on Noble Gases:

Name:\_\_\_\_\_\_Date:

## **Lewis Structures**

Draw the Lewis structures for the following compounds:

2) HBr

3) C<sub>2</sub>H<sub>5</sub>OH (ethanol OH is a polyatomic ion)

4)  $N_2F_4$  (N-N is your central atom)

5) SF<sub>6</sub>

6) PBr<sub>3</sub>

7) N<sub>2</sub>H<sub>2</sub> (N-N is your central atom)

8) CH<sub>3</sub>OH (OH is a polyatomic ion)

9) NO<sub>2</sub><sup>-1</sup>

## **Resonance Structures Practice**

Draw all of the possible resonance structures for the following ions or molecules:

1) NO<sub>3</sub>:--

2) formate ion (CHO<sub>2</sub><sup>-1</sup>):

3) cyclobutadiene (C<sub>4</sub>H<sub>4</sub>):

4) ozone (O<sub>3</sub>):

## Ranking Molecules by Increasing Polarity

In each of the following problems draw the Lewis structure and draw the dipole moment:

1) PF<sub>3</sub>, LiOH, SF<sub>2</sub>, NF<sub>3</sub>

2) Ni(OH)<sub>3</sub>, N<sub>2</sub>H<sub>2</sub>, CH<sub>3</sub>OH

3)  $B_2F_4$ , CuCl<sub>2</sub>

4) PH<sub>3</sub>, NH<sub>3</sub>, NF<sub>3</sub>

5) H<sub>2</sub>O, H<sub>2</sub>S, HF, H<sub>2</sub>

Nan	ne:
	Polarity Practice Worksheet
For their	each of the following pairs of compounds, determine which is most polar based or Lewis structures.
1)	methyl chloride (CHCl <sub>3</sub> ) or methyl bromide (CHBr <sub>3</sub> )
2)	water or hydrogen sulfide (H <sub>2</sub> S)
3)	hydrochloric acid (HCl) or hydroiodic acid (HI)
4)	HBr or HCl
•,	
5)	methanol (CH <sub>3</sub> OH) or diethyl ether [(CH <sub>3</sub> ) <sub>2</sub> O]

Name:	and the first section	150	Class:	

## **Chapter 8 Review Problems**

P

		tiple choice section (1 point ea	· ·	the best answers	
1)	How	many valence electrons does	gallium ha	ive?	٠
·	Α	1	C	5	
	<b>. B</b>	3	D	13	
2)	How	many electrons does phospho	rus have to	o gain in order to achieve a no	ble-gas
	elect	ron configuration?			Virtual I
	Α	2	C	5	
	В	3	D	4	
•	-				
3)	Whic	ch of the following takes place	in an ioni	c bond?	
	Α	Two atoms share two electronic	rons		
	В	Two atoms share electrons	such that I	both follow the octet rule.	٠
•	C	Like-charged ions attract			
	. <b>D</b> .	Oppositely-charged ions at	ract	. ·	
•		•			
4)	Ionic	compounds are normally foun	d in what	state at room temperature?	
	A	solid	C	gas	
	В	liquid	D	none of these	
•	•				
5)	The r	nelting temperature of potassiu	ım chlorid	e is relatively	
	(hint:	what kind of bond is it)	÷.		~
	Α	low	$\mathbf{C}$	KCl does not melt	
	В	high	D	about room temperature	
6)	What	characteristic of metals makes	them goo	od electrical conductors?	
	$\mathbf{A}$	Mobile valence electrons			
	В	Mobile protons			
	C	Their crystal structures rear	range easi	ly	
	D	Mobile cations	•		

7)	How	many electrons are shar	ed between two	atoms in a double cova	alent bond?	
•	A	8	C	4 * : :		
	В	6	D	2		. 4
					·	(
8)	How	many unshared pairs of	electrons are the	re on phosphorous in .	PCl <sub>3</sub> ?	
	A	1 .	C	3		
	В	. <b>6</b> ,	D	none of these		
				•		
9)	Whic	h of the following elem	ents occurs natur	ally as a diatomic mol	ecule with three	
	coval	ent bonds?				
•	<b>A</b> .	oxygen	C	fluorine		
	$\mathbf{B}$	hydrogen	D	nitrogen		
10)	When	a bond consist of bond	ing electrons tha	t are shared equally in	a single covalent	
	bond,	the bond is called a(n).	,··	•	•	
•	A	ionic covalent bond				
	В	polar covalent bond		·		
	C	one-sided covalent b	ond	÷	•	(
- 11 <del>1</del>	D	non-polar covalent b	ond			
	. *					
11)	Which	n of the following pairs	of elements can	be joined by a covalen	t bond?	
	•					
	A	Li and Br	C	Mg and C		
	В	N and C	D	He and O		
12).	In wh	ich of the following cor	npounds/ions is t	here an exception to the	ne octet rule (Draw	
	all 4 a	nd select all that apply)	?			
	A	SF <sub>6</sub>	. <b>C</b>	$XeCl_2$		
	В	$PH_3$	D	$\mathrm{BH_4}^{-1}$		•
		· . · ·		<b>,</b>		<del></del> 1
			•			
		. ]]				
			•			

C the random motion	ı of electrons	. •	1.	•
D none of these				: .
14.) In which type of bond are	electrons shared	l hetween atoms	9	
A. Ionic				
A. loine  B. Covalent			•	
C. Metallic		· · · · · · · · · · · · · · · · · · ·		
15) Which type of bond creates a	a crystalline stru	icture?	,	·
A. Ionic			•	
B. Covalent		•		
C. Metallic	. •			
16) Which type of bond usually	forms between	two nonmetals?		
A. Ionic	•			
B. Covalent				
C. Metallic				
7) In which type of bond are or	ne or more elect	rons transferred	from one at	om to
nother?				
A. Ionic	•	•	•	
3. Covalent	÷			
C. Metallic			•	
8.) Which of the following is N	JOT a character	istic of ionic sub	stances?	

bonding of a covalently-bonded hydrogen to an lone electron pair

13)

Α

В

What causes dipole-moment?

A. Conduct electricity in solution form.

D. Are usually gases at room temperature.

B. Have high melting points.

C. Usually dissolve in water.

unequal sharing of electron pairs

- 19) Which of the following is NOT a characteristic of metallic substances?
- A. Are lustrous, malleable, and ductile.
- B. Conduct electricity.
- C. Have low melting points.
- D. Are usually solids at room temperature.
- 20) Which of the following is NOT a characteristic of covalent substances?
- A. Have low melting points.
- B. Sometimes dissolve in water.
- C. Usually form small, individual molecules.
- D. Conduct electricity
- 21) Why do atoms form chemical bonds?
- A. To increase their potential energy.
- B. To become more stable.
- C. To gain more electrons.
- D. To obtain a higher electronegativity.

Part II: Draw the Lewis structures for the following compounds. Please be neat and clear in your drawings (1pt each)

22) SeO<sub>2</sub>

23) HBr

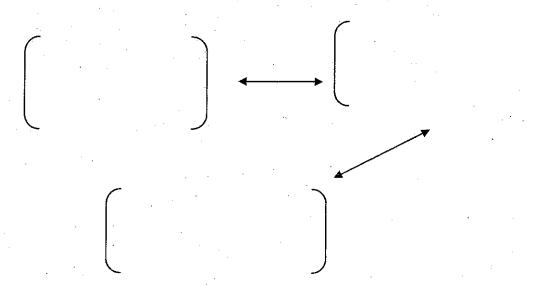
25) !	SF <sub>4</sub> -5
-------	--------------------

Part III. Draw the Lewis structure for the following molecules and then calculate the formal charge for <u>all</u> the atoms. Please make sure the formal charges are identified clearly. Please be neat and clear in your drawings. (3 pts each)

28. CH₃OH				
		•		
•				
29. NO <sub>2</sub> <sup>-1</sup>				<u></u> 1
	ı			

30. $C_2H_4$			· · · · · · · · · · · · · · · · · · ·	,
•		•		
	·			
31. Complete		,		the table

	LiO	ВС	Br <sub>2</sub>
Difference in Electronegativity			
Type of Bond			
Picture of electron cloud and dipole moment if applicable			



and the second second