Name: key

Chemistry 2: Bonding Review

A 1) A barium atom attains a stable electron configuration when it bonds with

(A) two chlorine atoms
C) one chlorine atom
B) two sodium atoms
D) one sodium atom

B 2) The bonds in BaO are *best* described as

A) covalent, because valence electrons are shared
(B) ionic, because valence electrons are transferred
C) covalent, because valence electrons are transferred
D) ionic, because valence electrons are shared

C 3) Which compound has *both* ionic and covalent bonding?

A) CH_2Cl_2
(C) $CaCO_3$
B) $C_6H_{12}O_6$
D) CH_3OH

D 4) An atom of which element has the *greatest* attraction for the electrons in a bond with a hydrogen atom?

A) sulfur
C) phosphorus
B) silicon
(D) chlorine

A 5) Which substance contains bonds that involved the transfer of electrons from one atom to another?

(A) KBr
B) Cl_2
C) CO_2
D) NH_3

B 6) As a bond between a hydrogen atom and a sulfur atom is formed, electrons are

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

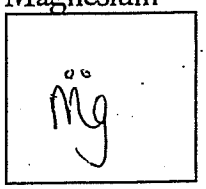
C 7) A molecular compound is formed when a chemical reaction occurs between atoms of

A) oxygen and magnesium
(C) oxygen and hydrogen
B) chlorine and sodium
D) chlorine and yttrium

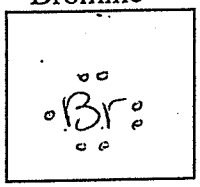
Nm to NM

8. Draw the Lewis Diagram for a magnesium atom and for a bromine atom.

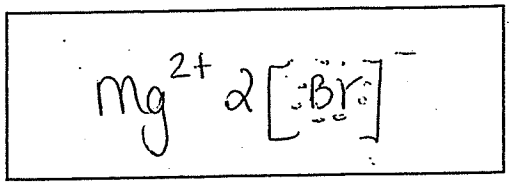
Magnesium



Bromine



9. Draw the Lewis Diagram for the compound formed between magnesium and bromine.



10. What is the formula and name of the compound above?

Formula $MgBr_2$ Name magnesium bromide

C. 11) An oxygen molecule contains a double bond because the two atoms of oxygen share a total of

A) 3 electrons
B) 2 electrons
C) 4 electrons
D) 1 electron

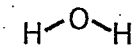
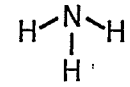
B. 12) What is the total number of pairs of electrons shared in a molecule of N_2?

A) two pairs
B) three pairs
C) one pair
D) four pairs

C. 13) The chemical bond between which two atoms is *most* polar? → greatest difference in EN

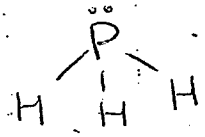
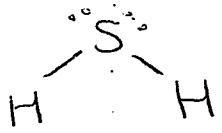
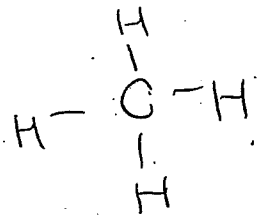
A) H-H
B) C-N
C) Si-O
D) S-Cl

A. 14) Which one of the following molecules has a nonpolar covalent bond?

A) H—H
B) H—Cl
C) 
D) 

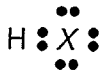
B. 15) Which of the following formulas represents a molecular compound?

A) Kr
B) N_2O_4
C) NaI
D) LiOH

Compound	Lewis Diagram	Shape	P/NP molecule?
CO_2		Linear	NP
PH_3		trigonal pyramidal	Polar
H_2S		Bent	Polar
CH_4		tetrahedral	NP

Key

3 16) Given the electron-dot formula:



Which atom represented as *X* would have the *least* attraction for the electrons that form the bond? lowest electronegativity

1) Cl 3.2 2) F 4.0 3) I 2.7 4) Br 3.0

4 17) In which compound have electrons been transferred to the oxygen atom? ionic metal to NM

1) CO_2 2) NO_2 3) N_2O 4) Na_2O

2 18) Which compound has the *least* ionic character? lowest difference in electronegativity

1) KI 2) NO 3.0 3.4 nm to nm. 3) MgS 4) HCl 2.2 3.2

1 19) Which type of bond is formed by the transfer of electrons from one atom to another? ionic

1) an ionic bond 3) a covalent bond
2) a hydrogen bond 4) a coordinate covalent bond

4 20) When ionic bonds are formed, metallic atoms tend to

1) gain electrons and become positive ions
2) lose electrons and become negative ions
3) gain electrons and become negative ions
4) lose electrons and become positive ions

3 21) Which atom will form an ionic bond with a Br atom? → metal.

1) N 2) C 3) Li 4) O

1 22) What type of bonding is characteristic of a substance that has a high melting point and electrical conductivity only in the liquid phase? IONIC

1) ionic 3) coordinate covalent
2) nonpolar covalent 4) metallic

2 23) The electrical conductivity of KI(aq) is *greater* than the electrical conductivity of H_2O because the KI(aq) contains mobile

1) molecules of KI 3) ions from H_2O
2) ions from KI 4) molecules of H_2O

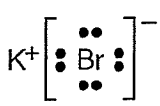
1 24) Which substance is the *best* conductor of electricity?

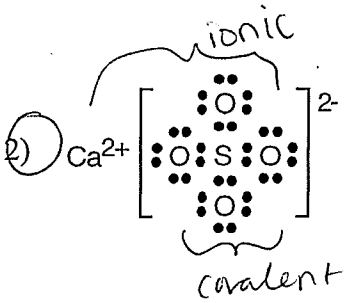
1) NaCl(ℓ) → ionic (liquid) 3) NaCl(s)
2) H_2O(s) 4) H_2O(g)

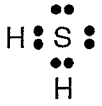
3 25) Which compound contains *both* ionic and covalent bonds? (look for PAI from Table E)

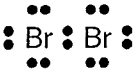
1) NaBr 2) CBr_4 3) NaOH 4) HBr

2 26) Which electron-dot diagram *best* represents a compound that contains *both* ionic and covalent bonds?

1) 

2) 

3) 

4) 

look for PAI from Table E.

1 27) What type of bonds are formed when two non-metal atoms combine?

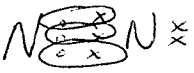
1) covalent bonds
2) metallic bonds
3) ionic bonds
4) network bonds

3 28) Which pair of atoms will share electrons when a bond is formed between them?

two NMs

1) Ba and I
2) K and Cl
3) Br and Cl
4) Li and I

3 29) The total number of pairs of shared electrons in a nitrogen molecule is



1) 1 2) 2 3) 3 4) 4

4 30) Which terms describe a substance that has a low melting point and poor electrical conductivity?

1) ionic and molecular
2) ionic and metallic
3) covalent and metallic
4) covalent and molecular

2 31) Which formula represents a molecular substance? NM to NM

1) Al_2O_3 2) CO 3) Li_2O 4) CaO

1 32) What type of bond is present in a water molecule?

1) polar covalent
2) electrovalent
3) ionic
4) nonpolar covalent

4 33) The bonding in NH_3 is *most* similar to the bonding in

covalent

1) KF 2) NaCl 3) MgO 4) H_2O

3 34) What type of bond is present in copper wire?

Cu

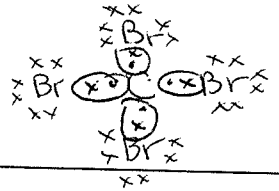
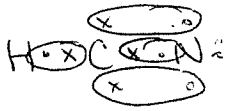
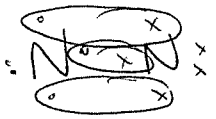
1) covalent
2) ionic
3) metallic
4) electrovalent

2 35) The ability to conduct electricity in the solid state is a characteristic of metallic bonding. This characteristic is *best* explained by the presence of

1) mobile protons
2) mobile electrons
3) high electronegativities
4) high ionization energies

Name:_____ Key

Chemistry R: Bonding Review

Compound Formula	Bond Type (ionic, polar covalent, or non-polar covalent)	Lewis Dot Structure	Can it conduct electricity?	Name of shape (for covalent only)	Polar/Non-Polar *Molecule* (for covalent only)
$SrCl_2$ (*s*)	ionic	Sr^{+2} 2 $[:\ddot{Cl}:]^{-1}$	NO		X
H_2S (*g*)	polar covalent		NO	bent	polar (asymmetrical)
CBr_4 (*l*)	polar covalent		No	tetrahedral	non-polar (symmetrical)
Li_3N (*aq*)	ionic	$3Li^{+1}$ $[:\ddot{N}:]^{-3}$	Yes		X
HCN (*g*)	polar covalent		No	linear	polar (asymmetrical)
CuI (*l*)	ionic	Cu^{+1} $[:\ddot{I}:]^{-1}$	Yes		X
N_2 (g)	non-polar covalent		No	linear	non-polar (symmetrical)