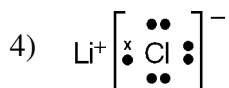
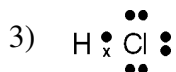
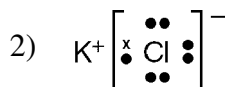
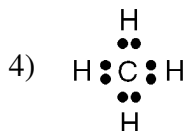
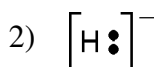
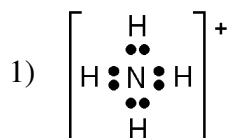


Name: _____

___ 1) Which electron-dot diagram represents a molecule that has a polar covalent bond?



___ 2) A proton (H^+) could form a coordinate covalent bond with



___ 3) Which noble gas has the *lowest* normal boiling point?

- 1) Ar 3) Xe
2) Ne 4) Kr

___ 4) What kinds of bonds are found in a sample of $\text{H}_2\text{O}(\text{s})$?

- 1) hydrogen bonds, only
2) both ionic and hydrogen bonds
3) covalent bonds, only
4) both covalent and hydrogen bonds

___ 5) Why is NH_3 classified as a polar molecule?

- 1) NH_3 is a gas at STP.
2) N—H bonds are nonpolar.
3) NH_3 molecules have asymmetrical charge distributions.
4) Nitrogen and hydrogen are both nonmetals.

___ 6) Argon has a *higher* boiling point than neon because argon has

- 1) stronger intermolecular forces of attraction
2) weaker intermolecular forces of attraction
3) more electrons in its outermost principal energy level
4) fewer electrons in its 2nd principal energy level

___ 7) Which formula represents an ionic compound?

- 1) $\text{CCl}_4(\ell)$
2) $\text{NH}_3(\text{g})$
3) $\text{NaCl}(\text{s})$
4) $\text{H}_2\text{O}(\ell)$

___ 8) Which compound contains *both* covalent bonds and ionic bonds?

- 1) $\text{HCl}(\text{g})$
2) $\text{NaCl}(\text{s})$
3) $\text{N}_2\text{O}_5(\text{g})$
4) $\text{NaNO}_3(\text{s})$

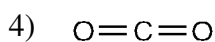
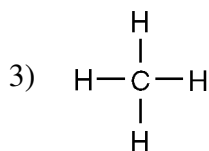
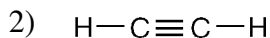
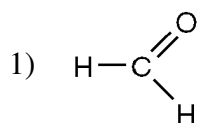
___ 9) What type of bond is present in copper wire?

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

___ 10) Which atom has the *strongest* attraction for electrons?

- 1) Cl 3) I
2) Br 4) F

___ 11) Which structural formula represents a polar molecule?



___ 12) A diamond consists of covalently bonded carbon atoms. The diamond is an example of

- 1) a network solid
- 2) a metallic solid
- 3) an ionic solid
- 4) a molecular solid

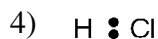
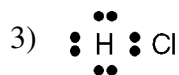
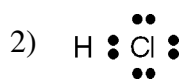
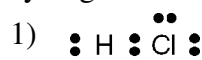
___ 13) What type of bonds are formed when calcium atoms react with oxygen atoms?

- 1) hydrogen
- 2) coordinate covalent
- 3) polar covalent
- 4) ionic

___ 14) Which atoms are *most* likely to form covalent bonds?

- 1) nonmetal atoms that share electrons
- 2) metal atoms that share electrons
- 3) nonmetal atoms that share protons
- 4) metal atoms that share protons

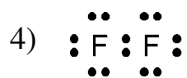
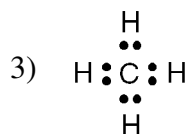
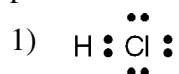
___ 15) The correct electron-dot formula for hydrogen chloride is



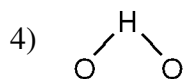
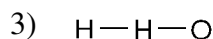
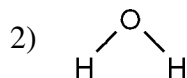
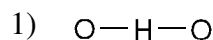
___ 16) Which combination of atoms can form a polar covalent bond?

- 1) H and H
- 2) H and Br
- 3) Na and Br
- 4) N and N

___ 17) Which electron-dot formula represents a polar molecule?



___ 18) Which diagram *best* represents the structure of a water molecule?



___ 19) Which two compounds contain only polar molecules?

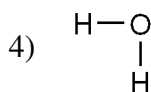
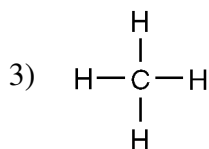
- 1) CCl_4 and CH_4
- 2) HCl and Cl_2
- 3) HCl and NH_3
- 4) CO and CO_2

___ 20) What type of bond is present in a water molecule?

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

___ 21) Which structural formula represents a polar molecule?

- 1) $\text{H}-\text{H}$
- 2) $\text{H}-\text{C}\equiv\text{C}-\text{H}$



___ 22) A characteristic of ionic solids is that they

- 1) have high melting points
- 2) are noncrystalline
- 3) conduct electricity
- 4) have low boiling points

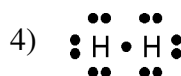
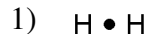
___ 23) When a reaction occurs between atoms with the electron configurations 2-8-1 and 2-7, what is the predominant type of bond formed?

- 1) ionic
- 2) metallic
- 3) nonpolar covalent
- 4) polar covalent

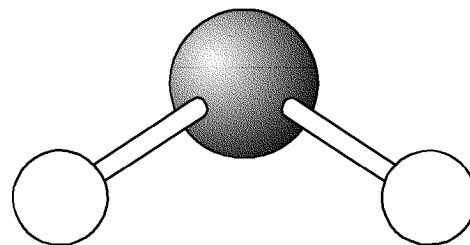
___ 24) Which formula represents a molecular substance?

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

___ 25) Which electron-dot diagram represents H_2 ?



___ 26) The diagram below represents a water molecule.



This molecule is *best* described as

- 1) nonpolar with nonpolar covalent bonds
- 2) polar with nonpolar covalent bonds
- 3) nonpolar with polar covalent bonds
- 4) polar with polar covalent bonds

___ 27) Which compound is ionic?

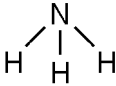
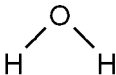
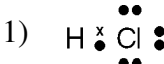
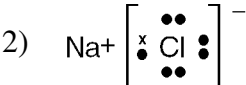
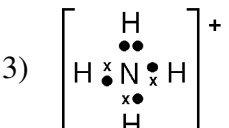
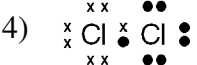
- 1) N_2O
- 2) SO_2
- 3) CaCl_2
- 4) HCl

___ 28) What type of bonding is found in the molecule HBr ?

- 1) metallic
- 2) nonpolar covalent
- 3) ionic
- 4) polar covalent

___ 29) Generally, how many valence electrons are needed for atoms to be *most* stable?

- 1) 32
- 2) 6
- 3) 18
- 4) 8

- ___ 30) In a nonpolar covalent bond, electrons are
- 1) transferred from one atom to another
 - 2) shared equally by two atoms
 - 3) shared unequally by two atoms
 - 4) located in a mobile "sea" shared by many ions
- ___ 31) Electronegativity is a measure of an atom's ability to
- 1) repel the protons of another atom
 - 2) repel the electrons in the bond between the atom and another atom
 - 3) attract the protons of another atom
 - 4) attract the electrons in the bond between the atom and another atom
- ___ 32) Which formula represents a tetrahedral molecule?
- 1) HBr
 - 2) Br₂
 - 3) CH₄
 - 4) CaCl₂
- ___ 33) Which molecule is nonpolar?
- 1) 
 - 2) O=C=O
 - 3) H—Cl
 - 4) 
- ___ 34) In which compound do the atoms have the *greatest* difference in electronegativity?
- 1) KF
 - 2) LiI
 - 3) AlCl₃
 - 4) NaBr
- ___ 35) Molecule-ion attractions are found in
- 1) NaCl(aq)
 - 2) Cu(s)
 - 3) KBr(l)
 - 4) CO(g)
- ___ 36) Which element would *most* likely form an ionic bond with chlorine?
- 1) O
 - 2) K
 - 3) S
 - 4) N
- ___ 37) What type of bonds are formed when metal atoms combine with nonmetal atoms?
- 1) polar covalent bonds
 - 2) ionic bonds
 - 3) non-polar covalent bonds
 - 4) metallic bonds
- ___ 38) Which element has the *lowest* electronegativity?
- 1) fluorine
 - 2) oxygen
 - 3) carbon
 - 4) nitrogen
- ___ 39) Which species contains a coordinate covalent bond?
- 1) 
 - 2) 
 - 3) 
 - 4) 
- ___ 40) Which particles may be gained, lost, or shared by an atom when it forms a chemical bond?
- 1) electrons
 - 2) neutrons
 - 3) protons
 - 4) nucleons