

Name: _____

Period: _____

Ionic and Covalent Bonding Exam Review

1. Summary:

Use the word bank below to fill in the summary.

- | | | | |
|-----------------|---------------------|-------------|--------------|
| • Electrostatic | • Double | • Metal | • Hydrogen |
| • Metallic | • Electrons | • Molecules | • Positive |
| • Shared | • London Dispersion | • Ductility | • Anion |
| • Hammered | • Dipoles | • Gains | • Conductors |

Ionic bonds occur between a _____ and a nonmetal. The metal forms a cation with a _____ charge when it loses electrons while the nonmetal forms a(n) _____ with a negative charge when it _____ electrons. _____ attraction occurs between the cation and anion.

_____ bonds are made up of shared electrons around the nuclei of multiple atoms of a metal. This “sea of valence _____” give metals their distinctive properties like being good _____ and their malleability and ductility. Malleability is the ability of a metal to be _____ into sheets and _____ is the ability to be pulled into wires.

Covalent bonds form when electrons are _____ between nonmetals. Covalently bonded compounds can have single, _____ or triple bonds.

Intermolecular forces occur between _____. Polar forces exist if electrons are shared unequally, creating two areas of charge, or _____, in a molecule. One type of dipole is the hydrogen bond. Hydrogen bonds exist between _____ on one molecule and highly electronegative atoms (like fluorine, oxygen or nitrogen) on another molecule. Nonpolar forces exist between molecules that have equal internal sharing of their electrons. These nonpolar forces are called _____ forces and are relatively weak.

2. Use the electronegativity chart below to determine if the following bonds are ionic, polar covalent, or nonpolar covalent.

H 2.20																	He n.a.
Li 0.98	Be 1.57											B 2.04	C 2.55	N 3.04	O 3.44	F 3.98	Ne n.a.
Na 0.93	Mg 1.31											Al 1.61	Si 1.90	P 2.19	S 2.58	Cl 3.16	Ar n.a.
K 0.82	Ca 1.00	Sc 1.36	Ti 1.54	V 1.63	Cr 1.66	Mn 1.55	Fe 1.83	Co 1.88	Ni 1.91	Cu 1.90	Zn 1.65	Ga 1.81	Ge 2.01	As 2.18	Se 2.55	Br 2.96	Kr 3.00
Rb 0.82	Sr 0.95	Y 1.22	Zr 1.33	Nb 1.60	Mo 2.16	Tc 1.90	Ru 2.20	Rh 2.28	Pd 2.20	Ag 1.93	Cd 1.69	In 1.78	Sn 1.96	Sb 2.05	Te 2.10	I 2.66	Xe 2.60
Cs 0.79	Ba 0.89	La 1.10	Hf 1.30	Ta 1.50	W 2.36	Re 1.90	Os 2.20	Ir 2.20	Pt 2.28	Au 2.54	Hg 2.00	Tl 1.62	Pb 2.33	Bi 2.02	Po 2.00	At 2.20	Rn n.a.
Fr 0.70	Ra 0.89	Ac 1.10	Rf n.a.	Db n.a.	Sg n.a.	Bh n.a.	Hs n.a.	Mt n.a.	Ds n.a.	Rg n.a.	Uub n.a.	—	Uuq n.a.	—	—	—	—

- a. H-F _____
 b. Mg-O _____
 c. C-S _____

- d. O-Cl _____
 e. K-Br _____
 f. H-H _____

3. Practice:

Electron dot structure

Shape

Bond Type

Molecule Polarity



4. Why do we not use the noble gases when drawing electron dot structures?

5. Draw the trend for electronegativity on the periodic table below.

THE PERIODIC TABLE

1																	18		
1	H																	He	
2	Li	Be											B	C	N	O	F	Ne	
3	Na	Mg											Al	Si	P	S	Cl	Ar	
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
6	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
7	Fr	Ra	Ac	Rf	Ha	Sg	Nh	Hs	Mt	Uun	Uuu	Uuq	Uur	Uus	Uut	Uuq	Uur	Uus	Uut

Lanthanide Series	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
Actinide Series	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103

6. What elements are exceptions to the octet rule? Why?

7. Draw the resonance structures for the carbonate ion.