**Part 1:** Use the periodic table below to answer questions 1-12. Multiple answers may apply

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  F |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | **D** |  |  |  |
| **A** |  |  |  |  |  |  |  |  |  |  |  | **C** |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | B |  |  |  |  |  |  |  |  | E |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. Which letter(s) represent metals? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Which letter(s) represent nonmetals?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which of the following combinations represent an ionic compound? \_\_\_\_\_\_\_\_
	1. A & B
	2. B & E
	3. A & E
	4. C & D
	5. C & F
	6. D & E
4. Which of the following combinations represent a covalent molecule? \_\_\_\_\_\_\_\_\_
	1. A & C
	2. D & E
	3. B & D
	4. C & F
	5. E & F
	6. C & D
5. Which letter(s) represent elements that use roman numerals in their chemical name(s)?\_\_\_\_\_\_\_\_\_\_\_
6. Which letter(s) will form a cation?\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Which letter(s) will form an anion?\_\_\_\_\_\_\_\_\_\_\_\_
8. Which letter(s) will gain three electrons to be stable?\_\_\_\_\_\_\_\_\_
9. Which letter(s) will acquire a +3 charge? \_\_\_\_\_\_
10. Which letter has the highest ionization energy?\_\_\_\_\_\_\_
11. Which letter has the highest electronegativity?\_\_\_\_\_\_\_\_\_
12. Which letter(s) will acquire a positive charge in following the octet rule?\_\_\_\_\_\_

**Part 2:** Answer the questions below

1. How many electrons does Mg2+ have? \_\_\_\_\_
2. How many protons does N-3 have? \_\_\_\_\_\_
3. What will be the ion symbol (formula), if the ion has 19 protons and 18 electrons? \_\_\_\_\_\_
4. How many electrons does an ion have if it has 16 protons and a -2 charge? \_\_\_\_
5. If an ion has 53 protons and 54 electrons, what will be its charge? \_\_\_\_\_\_\_\_\_
6. Given the formula X(NO3)3, what is the charge on ion X? Be sure to include the sign (+ or -) . \_\_\_\_\_\_\_
7. How many electrons does the Copper ion have in the ionic compound Cu2SO4? \_\_
8. Circle the atom ***in each pair*** that has the largest atomic radius.

a) Al B b) Br Cl c) Na Al d) O F

1. Ionization energy is
2. Which letter on the chart indicates the noble gases or the inert elements —
3. Circle the atom ***in each pair*** that has the greater ionization energy.

a) Li Be b) Cl Si c) Ca Ba d) P Ar

1. Electronegativity is:
2. Circle the atom ***in each pair*** that has the greater electronegativity.

a) Ca Ga b) Br As c) Ba Sr d) O S

1. Arrange the following in order of increasing ionic size.
	1. I-, Br-, Cl-
	2. P3-, S2-, Cl-
	3. Ba2+, Sr2+, Ca2+
2. Label the atoms below as either Sodium or as Sodium Ion(Na1+):

b.\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a.\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Label the atoms below as either Oxygen or as Oxygen Ion(O2-):

b.\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a.\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 3:** Name the following:

1. P2O5
2. Zn(NO3)2
3. IO2
4. VO2
5. PbS

**Part 4:** Determine the formula for the following:

1. disilicon hexabromide
2. copper (I) phosphate
3. gallium oxide

29. silver acetate

30.calcium sulfate

**Part 5:** Draw each VSPER Shape and describe each

**Part 6:** Draw the Lewis structure and determine the molecular geometry for each.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Lewis structure | VSPER Molecular Shape  | VSPER Molecular Shape Name |
| 42.PCl3  |  |  |  |
| 43. CCl4 |  |  |  |

**Part 6:** Determine if the following bonds are polar or nonpolar

44. H-O 45. N-Cl 46. P-Cl