*This practice packet is a general guideline to help you study. It is NOT a definitive list. There are potentially things on here that will not show up on the test, and there are potentially things not on this list that will show up on the test. Material that appeared in Warm Ups, Notes, Homework, Classwork, Labs, Study Materials, etc are all have the potential to appear on the test.*

**Start with the optional worksheets you already have!**

1. Worksheet #9\* from Chapter 4 packet
2. Worksheet #16\* from Chapter 5 packet
3. Worksheet #5\* from Chapter 6 packet

**Answer the following questions:**

1. Define: reactivity, atomic radius, electronegativity, ionization energy, electron affinity
2. Describe the pattern going up/down left/right for each of the trends above
3. Explain WHY each trend happens the way it does up/down left/right. Give the BEST answer.
4. Where are the most active metals located?
5. Where are the most active non-metals located?
6. Is negative ion larger/smaller than parent atom?
7. Is positive ion larger/smaller than parent atom?
8. Where is the highest electronegativity found?
9. Where is the lowest electronegativity found?
10. Elements of Group 1A are called
11. Elements of Group 2A are called
12. Elements in middle of periodic table are called
13. Group 7A elements are called
14. Group 8A elements are called
15. From left to right across the periodic table, do elements go from (metals to nonmetals) or (nonmetals to metals)?
16. The most active element in Group 7A is
17. What orbitals are filling across Transition Elements?
18. Elements within a group have same number of?
19. Are the majority of elements in the periodic table metals or non metals
20. Elements in the periodic table are arranged according to their what?
21. For each set of atoms, rank the atoms from smallest to largest atomic radius.

a) Li, C, F

b) Li, Na, K

c) Ge, P, O   
 d) C, N, Al   
 e) Al, Cl, Cu

1. For each set of atoms, rank them from lowest to highest ionization energy.

a) Mg, Si, S

b) Mg, Ca, Ba   
 c) F, Cl, Br   
 d) Ba, Cu, Ne   
 e) Si, P, He

1. For each set of atoms, rank them from lowest to highest electronegativity.

a) Li, C, N

b) Ne, C, O   
 c) Si, P, O   
 d) Mg, K, P   
 e) S, F, He

1. ***Circle the correct element.***

Li Si S metal

N P As smallest ionization energy

K Ca Sc largest atomic mass

S Cl Ar member of the halogen family

Al Si P greatest electronegativity

Ga Al Si largest atomic radius

V Nb Ta largest atomic number

Te I Xe member of noble gases

Si Ge Sn 4 energy levels

Li Be B member of alkali metals

As Se Br 6 valence electrons

H Li Na nonmetal

Hg Tl Pb member of transition metals

Na Mg Al electron config. ending in s2p1

Pb Bi Po metalloid

B C N gas at room temperature

Ca Sc Ti electron config. ending in s2d2

**Identify type of bond and then either write the name or write the formula:**

1. Sodium iodide
2. NH4OH
3. carbon tetrahydride
4. N2O4
5. C2H4O2
6. (NH4)2O
7. N2O2
8. SO2
9. Mg3(PO3)2
10. P4O10
11. Phosphorus pentachloride
12. dioxygen difloride
13. strontium borate
14. sulfur trioxide
15. sodium sulfate

**Answer the following questions about bonding:**

1. How are ionic bonds, covalent bonds, and metallic bonds different?
2. Give one examples of a compound for each of the above bonds.
3. If you have a compound with a high electronegativity difference what type of bond is it?
4. What is the strongest intermolecular bond?
5. What type of intermolecular bond does water have?
6. What type of bond holds Iron together?
7. List the following intermolecular forces/structures from Strongest to Weakest:

*Hydrogen Bonding, Metallic Bonding, London Dispersion, Ionic Lattices, Dipole-Dipole, Network Covalent*

1. Draw Lewis Structures of 3 water molecules next to each other and label the hydrogen bonds with dashed lines.
2. Put the compounds below in order of intermolecular forces.

Name Boiling point

*Dicarbon hexahydride -89oC*

*Diamonds (carbon) 4827 oC*

*Sodium chloride 1,465 oC*

*Dihydrogen monoxide 100 oC*

1. Which of the above is a network covalent bond? Which is a ionic lattice? Which is a hydrogen Dipole Dipole?
2. How many valance electrons are there in each of the elements and compounds below?
   1. Ca
   2. P
   3. Se
   4. NH3
   5. NF3
   6. H2S

**Draw the Lewis structure for each of the compounds below and show if they are ionic or covalent using the electronegativity values from your notes/worksheets:**

1. LiF
2. MgO
3. CH4
4. CH3OH
5. NH3
6. H2O
7. CH4

**Draw the Lewis Structures of the following:**

1. CH2Cl2
2. SO42-
3. CH3OH
4. SO2
5. NO3-
6. NH4+

**Identify the type of reaction and balance. For single and double replacements, write the net ionic equation.**

1. \_\_\_Cu(s) + \_\_\_O2(g) 🡪 \_\_\_CuO(s)
2. \_\_\_H2O 🡪 \_\_\_H2(g) + \_\_\_O2(g)
3. \_\_\_Fe(s) + \_\_\_H2O(g) 🡪 \_\_\_H2(g) + \_\_\_Fe3O4
4. \_\_\_AsCl3(aq) + \_\_\_H2S(aq) 🡪 \_\_\_As2S3(s) + \_\_\_HCl(aq)
5. \_\_\_CuSO4 • 5H2O(s) 🡪 \_\_\_CuSO4(s) + \_\_\_H2O(g)
6. \_\_\_Fe2O3(s) + \_\_\_H2(g) 🡪 \_\_\_Fe(s) + \_\_\_H2O(l)
7. \_\_\_CaCO3(s) 🡪 \_\_\_CaO(s) + \_\_\_CO2(g)
8. \_\_\_Fe(s) + \_\_\_S8(s) 🡪 \_\_\_FeS(s)
9. \_\_\_H2S(aq) + \_\_\_KOH(aq) 🡪 \_\_\_HOH(l) + \_\_\_K2S(aq)
10. \_\_\_NaCl(l) 🡪 \_\_\_Na(l) + \_\_\_Cl2(g)
11. \_\_\_Al(s) + \_\_\_H2SO4(aq) 🡪 \_\_\_H2(g) + \_\_\_Al2(SO4)3(aq)
12. \_\_\_H3PO4(aq) + \_\_\_NH4OH(aq) 🡪 \_\_\_HOH(l) + \_\_\_(NH4)3PO4(aq)
13. \_\_\_C3H8(g) + \_\_\_O2(g) 🡪 \_\_\_CO2(g) + \_\_\_H2O(g)
14. \_\_\_Al(s) + \_\_\_O2(g) 🡪 \_\_\_Al2O3(s)
15. \_\_\_CH4(g) + \_\_\_O2(g) 🡪 \_\_\_CO2(g) + \_\_\_H2O(g)

**Identify the type, predict the products, balance. For any single and double replacement reactions use your solubility rules to do the net ionic equation as well.**

1. Mg + O2 🡪
2. CH4 + O2 🡪
3. AgNO3 + NaCl 🡪
4. HgO 🡪
5. Cu + AgNO3 🡪
6. Zn + HCl 🡪
7. FeS + HCl 🡪
8. MgCl2 🡪
9. C2H6 + O2 🡪
10. K + Cl2 🡪