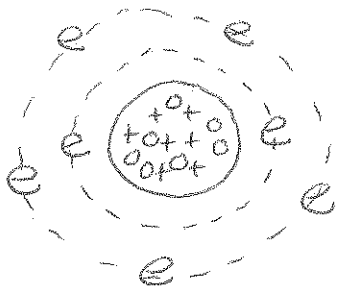
Name: _____ Date: Copy Class Period: _____

Atomic Structure, Chemical Bonding, and Water
Study Guide for Quiz

Atomic Structure

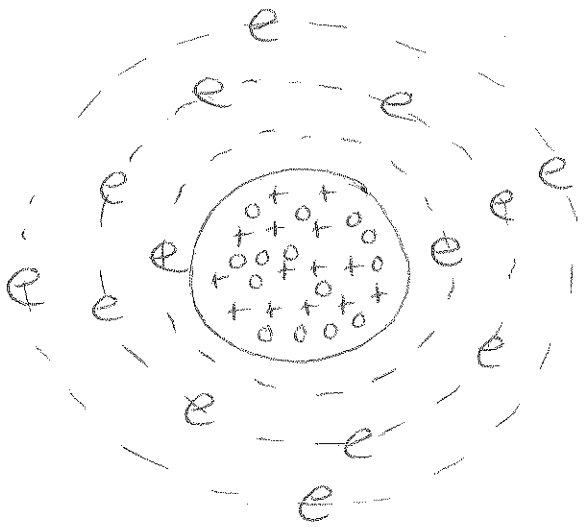
1. Use the atom on the right to give the # of protons, neutrons, electrons, atomic number, mass number and charge on the atom.

a. Protons 7
b. Neutrons 7
c. Total # of Electrons 7
d. Atomic Number 7
e. Mass Number 14
f. Charge on Atom (prot-elec) 0
g. What is the symbol for this atom? N



2. Use your periodic table to determine the following answers:

a. What is the symbol for a silicon atom? Si
b. What is the atomic number of a silicon atom? 14
c. What is the mass number (or atomic mass) for this atom 28
d. How many neutrons does a silicon atom have? 14
e. How many protons does a silicon atom have? 14
f. How many total electrons does a neutral (no charge) silicon atom have? 14
g. Draw an atom of silicon below.



Chemical Bonding

3. How many **valence** electrons does an atom of Fluorine (F) have? 7 (JUST THE OUTERMOST ELECTRONS)

4. What makes an atom stable? A FILLED UP OUTERMOST LEVEL

1ST LEVEL - 2e-
2ND LEVEL - 8e-
3RD LEVEL 8e-

5. Why do atoms bond to other atoms? TO FILL UP THEIR OUTERMOST LAYER WITH ELECTRONS

6. What is the difference between an ionic and covalent bond?

IONIC BOND - ONE ATOM LOSES e- AND ONE ATOM GAINS e-

COVALENT BOND - ATOMS SHARE ELECTRONS

7. Draw a dot diagram representing an ionic bond and explain what is happening.

Na· → ·Cl:

Na+ Cl-

NaCl

Na IS LOSING ONE e- AND Cl IS GAINING ONE e-
Na BECOMES A POSITIVE ION Cl BECOMES A NEGATIVE ION
OPPOSITE CHARGED IONS ATTRACT

8. Draw a dot diagram representing a covalent bond and explain what is happening.

H:H

BOTH H NEED ONE e- SO THEY SHARE ONE ELECTRON

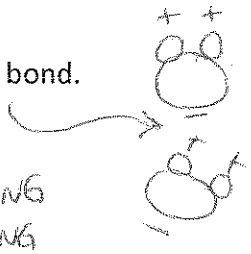
Water

9. What is the chemical formula for water? H_2O

10. What bond holds the **two hydrogens and one oxygen** together? COVALENT

11. Water is a POLAR molecule because the hydrogen ends are slightly POSITIVE and the oxygen end is slightly NEGATIVE.

12. When one polar molecule bonds to another polar molecule this is a HYDROGEN bond.



13. What is the difference between cohesion and adhesion? Give examples of each.

COHESION - WATER H.BONDS TO WATER ; DROPS OF WATER PUDDLING

ADHESION - WATER H. BONDS TO OTHER POLAR MOLECULES ; WATER STICKING TO STRING - CLOTHES

14. Describe an event in water Olympics when you observed surface tension.

FLOATING A PAPER CLIP ON SURFACE OF WATER

15. The pH of pure water is 7. A solution with a pH less than 7 is called a(n) ACID. An example is VINEGAR. A solution with a pH higher than 7 is called a(n) BASE. An example is BAKING SODA.

15. Draw a water molecule below (mickey mouse). Label the positive and negative ends then draw another water molecule **hydrogen bonding** to it.