1. Define each of the following terms:

a.Alkaline earth metals = elements in group 2 of the periodic table

b.Chemistry = the study of the properties and changes in matter

c.Matter = anything that has mass and takes up space

d.Group = the columns in the periodic table

e.Period = the rows in the periodic table

f.Alkali metals = found in group 1 of the periodic table

g.Covalent bond = the bond that is created between two non-metals, electrons are shared

h.Proton = the positive charged subatomic particle found in the nucleus of the atom

i.Neutron = the neutral (no charge) subatomic particle found in the nucleus of the atom

j.Molecular compound = composed of two non-metals sharing electrons in a covalent bond

k.Ionic compound = composed of a metal and a non-metal transferring electrons

l.Polyatomic ion = ion composed of many atoms i.e. $PO_4$, $SO_4$

m.Chemical property = a property that describes the behavior of a substance

n.Physical property = a property that describes the appearance of a substance

o.Electron = a negatively charged subatomic particle found in the orbits of an atom

p.Subatomic particles = consist of protons, neutrons and electrons

q.Pure substance = a substance that only contains one thing

r. particle theory of matter = there are several parts to the theory describing matter and how it behaves.

2 a.Where are valance electrons located? In the outermost orbit of atoms

b.How many valance electrons do each of the following have:

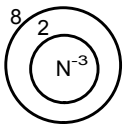
i. Oxygen 8 ii. Carbon 4 iii. Nitrogen 5

c. What is the most reactive group of elements on the periodic table? The most un-reactive? The most reactive group of elements are in group 1. The most unreactive group of elements are in group 18 (noble gases).

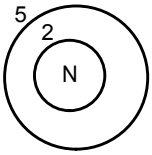
3. What two subatomic particles are found in the nucleus and what are their charges? Protons and neutrons are found in the nucleus. Protons are positive, neutrons are neutral (no charge)

4. Draw Bohr diagrams of the following atoms:

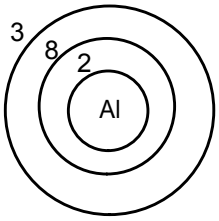
a. Nitride



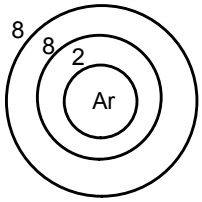

b. nitrogen



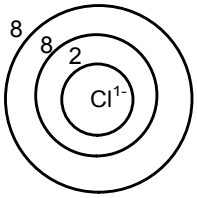

c. aluminum



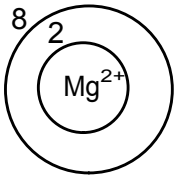

d. argon




e. chloride




f. magneisum$^{2+}$



5. Identify the following elements based on their position on the periodic table:

a. Period 4, group 5 V (vanadium)

b. Period 5, group 1 Rb (rubidium)

c. Period 2, group 17 F (Fluorine)

6. Elements lose or gain electrons in order to be stable. Elements are stable when their valance (outer orbit) is full of electrons.

7. a. +2 c. -3

b. +1 d. -1

8. For each of the following state whether it is a physical or chemical change.

a. A popsicle melts on the pavement - physical (it is only changing states from solid to liquid there is no new substance formed)

b. Gasoline burns in the air - chemical (gasoline burning is a combustion which is an example of a chemical change, also heat and light are produced and the change is difficult to reverse all characteristics of a chemical change.)

c. Water freezes at 0°C - Physical (melting point is an exmaple of a physical characteristic. Also the water is only changing states from liquid to solid there is no new substance formed.)

9. What is the difference between an ionic compound and a molecular compound in terms of:

a. The bonds formed between them - An ionic compound is formed because electrons are transferred from one element to another using ionic bonds. A molecular compound is formed when elements share electrons through a covalent bond.

b. The elements involved - Ionic Compounds involve metals and non-metals, whereas molecular compounds involve two non-metals.