1. Write formulas for the following compounds.

a. Dinitrogen Triphosphide
$N_2P_3$

b. Iron(II) Nitrite
$Fe(NO_2)_2$

c. Barium Acetate
$Ba(C_2H_3O_2)_2$

d. Hypochlorous acid
$HClO_{(aq)}$

e. Ammonium Chloride
$NH_4Cl$

f. Trisulfur Tetroxide
$S_3O_4$

g. Hydroiodic acid
$HI_{(aq)}$

h. Potassium Phosphide
$K_3P$

i. Rubidium Peroxide
$Rb_2O_2$

j. Sulfur Tetriodide
$SI_4$

2. Write names for the following compounds.

a. $HF_{(aq)}$
Hydrofluoric acid

b. $Ni(NO_2)_2$
Nickel(II) Nitrite

c. $Al_2(CO_3)_3$
Aluminum Carbonate

d. $PCl_3$
Phosphorus Trichloride

e. $H_2C_2O_{4\,(aq)}$
Oxalic acid

f. NaCl
Sodium Chloride

g. $I_2Br_3$
Diodine Tribromide

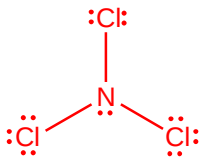
h. $Na_2O_2$
Sodium Peroxide

i. $AuCl_3$
Gold(III) Chloride

j. $UF_6$
Uranium(VI) Fluoride

3. Draw ***electron dot structures*** for the following compounds. For any compound that contains a covalent structure, give the ***electron pair geometry***, the ***molecular geometry***, and state whether or not it is ***polar***.

a. $NCl_3$




EPG: Tetrahedral
MG : Trigonal Pyramidal
Polar

b. $SeS_2$


EPG: Trigonal Planar
MG: Bent
Polar

4. Calculate the relative average atomic mass of an element that has two isotopes. The first isotope has an abundance of 38.95% and a relative mass of 228.96314 amu. The second isotope has a relative mass of 230.991863 amu.

Second isotope has an abundance of 1.0000-0.3895 = 0.6105

$$(0.3895)(228.96314\ \text{amu}) + (0.6105)(230.991863\ \text{amu})$$
$$= 89.18114303\ \text{amu} + 141.02053262\ \text{amu} = 230.201675392\ \text{amu} = 230.2\ \text{amu}$$

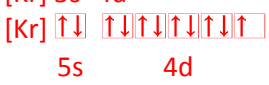
5. Complete the following table:

| Name of Element | Isotope symbol | Mass Number | Atomic Number | Number of Protons | Number of Neutrons | Number of Electrons |
|---|---|---|---|---|---|---|
| Technetium | $^{99}_{43}Tc$ | 99 | 43 | 43 | 56 | 43 |
| Iodine | $^{128}_{53}I$ | 128 | 53 | 53 | 75 | 53 |
| Tungsten | $^{184}_{74}W$ | 184 | 74 | 74 | 110 | 74 |
| Phosphorus | $^{31}_{15}P$ | 31 | 15 | 15 | 16 | 15 |

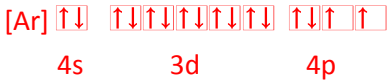
3. Give the ***electron configuration*** and ***orbital diagrams*** for the elements below.

a. Uranium [Rn] $7s^2\ 6d^1\ 5f^3$


b. Silver [Kr] $5s^2\ 4d^9$




c. Selenium [Ar] $4s^2\ 3d^{10}\ 4p^4$




d. Strontium [Kr] $5s^2$

5. Classify the following as pure substances, homogeneous mixtures, or heterogeneous mixtures.

a. water pure substance

b. Sea water (excluding plants and animals) homogeneous mixture

c. urine homogeneous mixture

d. mayonnaise homogeneous mixture

e. apple juice homogeneous mixture

f. air homogeneous mixture

7. Complete the following table.

| Name of Element | Symbol |
|---|---|
| Helium | He |
| Beryllium | Be |
| Neon | Ne |
| Nitrogen | N |
| Sodium | Na |
| Silicon | Si |
| Phosphorus | P |
| Iron | Iron |
| Silver | Ag |
| Gold | Au |
| Tin | Sn |
| Zinc | Zn |