Chemistry Review

1. What is the charge of the following families;
    a. Alkali Metals _____
    b. Alkali Earth Metals _____
    c. Halogens _____
    d. Nobel Gases _____
    e. Transitional Metals _____

2. Draw the Lewis Dot Diagrams for the following elements
    a. Boron

    b. Magnesium

    c. Sodium

    d. Chlorine

    e. Argon

3. Draw the Lewis Dot Diagrams for the following pairs of elements. Include the Formula of the chemical created
    a. Sodium & Chlorine

    b. Magnesium & Sulfur

    c. Aluminum & Fluorine

    d. Calcium & Phosphorus

    e. Barium & Oxygen

4. Draw the Lewis Dot Diagrams for the following compounds
    a. CH_4

    b. N_2H_4

    c. H_2O

d. CF_4

e. NH_3

5. Write the IUPAC name of the following compounds

a. N_2O_5 _____

b. $AlCl_3$ _____

c. NH_3 _____

d. SrS _____

e. Ni_3P_2 _____

f. Li_2S _____

g. CO _____

h. Pb_2O _____

i. SF_6 _____

j. H_2 _____

6. Write the IUPAC formula for the following compounds

a. Nickel (I) hydride _____

b. Aluminum fluoride _____

c. Dinitrogen pentaoxide _____

d. Carbon monoxide _____

e. Potassium phosphide _____

f. Copper (II) bromide _____

g. Xenon trioxide _____

h. Magnesium nitride _____

i. Carbon tetrachloride _____

j. Sodium oxide _____

7. Balance the following chemical equations

a. ____$KClO_3$ → ____KCl + ____O_2

b. ____$AlBr_3$ + ____K_2SO_4 → ____KBr + ____$Al_2(SO_4)_3$

c. ____H_2 + ____O_2 → ____H_2O

d. ____$Pb(OH)_2$ + ____HCl → ____H_2O + ____$PbCl_2$

e. Potassium bromide and Magnesium metal are created when Potassium and Magnesium bromide react

f. ____C_8H_{18} + ____O_2 → ____CO_2 + ____H_2O

g. ____N_2 + ____H_2 → ____NH_3

h. Sodium chloride and Fluorine mix to create Sodium fluoride and Chlorine

i. ____$FeCl_3$ + ____NaOH → ____$Fe(OH)_3$ + ____NaCl

j. ____$C_6H_{12}O_6$ + ____O_2 → ____CO_2 + ____H_2O

8. Identify each of the reactions in question 7.

9. Predict the products in the following questions

   a. $Mg + Fe_2O_3 \rightarrow$

   b. $C_2H_4 + O_2 \rightarrow$

   c. $NaOH + KNO_3 \rightarrow$

   d. $H_2O \rightarrow$

   e. $NaOH + HCl \rightarrow$

10. Determine the colour of each chemical with the listed pH indicator

    a. Vinegar with Blue litmus paper _____

    b. Concentrated NaOH with phenolphthalein _____

    c. Dilute HNO_3 with Universal Indicator _____

    d. Soap with Blue Litmus paper _____

11. Name each of the following

    a. HCl _____

    b. $Ca(OH)_2$ _____

    c. NH_4OH _____

12. What is the chemical formula for each of the following chemicals

    a. Sulfuric Acid _____

    b. Sodium hydroxide _____

    c. Nitric Acid _____

13. Describe what is wrong with this scenario.

    146grams of Aluminum powder is reacted with 360grams powdered Iron (III) oxide. The reaction gives lots of light and heat. In the end, when the reaction has ended, there is 306g of Aluminum oxide and 208grams of liquid iron.

Science 20F Name: _____

Chemistry Review - ANSWERS

1. What is the charge of the following families
   a. Alkali Metals +1
   b. Alkali Earth Metals +2
   c. Halogens -1
   d. Nobel Gases No Charge
   e. Transitional Metals Various

2. Draw the Lewis Dot Diagrams for the following elements
   a. Boron

   b. Magnesium

   c. Sodium

   d. Chlorine

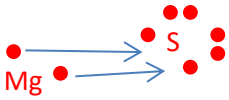
   e. Argon

3. Draw the Lewis Dot Diagrams for the following pairs of elements. Include the Formula of the chemical created

   a. Sodium & Chlorine

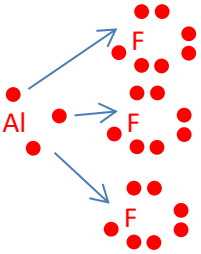
Formula Unit: NaCl

   b. Magnesium & Sulfur



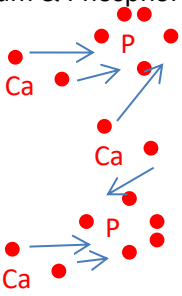
Formula Unit: MgS

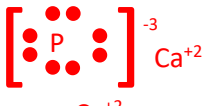
   c. Aluminum & Fluorine



Formula Unit: AlF_3

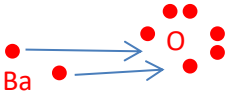
   d. Calcium & Phosphorus





Formula Unit: Ca_3P_2

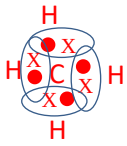
   e. Barium & Oxygen

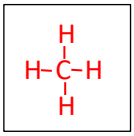


Formula Unit: BaO

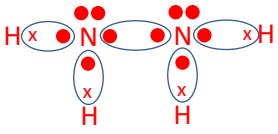
4. Draw the Lewis Dot Diagrams for the following compounds

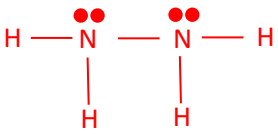
   a. CH_4





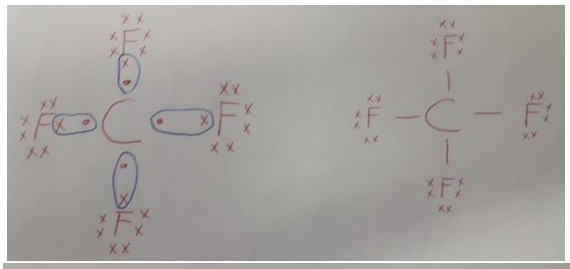
   b. N_2H_4



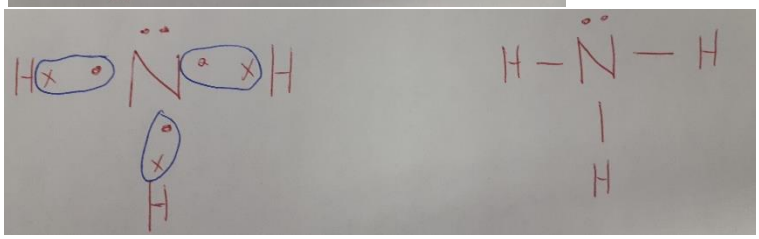


c. H_2O

d. CF_4



e. NH_3



5. Write the IUPAC name the following compounds

a. N_2O_5 Dinitrogen pentaoxide

b. $AlCl_3$ Aluminum chloride

c. NH_3 Ammonia

d. SrS Strontium sulfide

e. Ni_3P_2 Nickel (II) phosphide

f. Li_2S Lithium sulfide

g. CO Carbon monoxide

h. Pb_2O Lead (I) oxide

i. SF_6 Sulfur hexafluoride

j. H_2 Hydrogen

6. Write the IUPAC formula for the following compounds
   a. Nickel (I) hydride NiH
   b. Aluminum fluoride AlF_3
   c. Dinitrogen pentaoxide N_2O_5
   d. Carbon monoxide CO
   e. Potassium phosphide K_3P
   f. Copper (II) bromide $CuBr_2$
   g. Xenon trioxide XeO_3
   h. Magnesium nitride Mg_3N_2
   i. Carbon tetrachloride CCl_4
   j. Sodium oxide Na_2O

7. Balance the following chemical equations
   a. $2\ KClO_3 \rightarrow 2KCl + 3\ O_2$
   b. $2\ AlBr_3 + 3\ K_2SO_4 \rightarrow 6\ KBr + 1\ Al_2(SO_4)_3$
   c. $2\ H_2 + 1\ O_2 \rightarrow 2\ H_2O$
   d. $1\ Pb(OH)_2 + 2\ HCl \rightarrow 2\ H_2O + 1\ PbCl_2$
   e. Potassium bromide and Magnesium metal are created when Potassium and Magnesium bromide react

      $2\ K + 1\ MgBr_2 \rightarrow 2\ KBr + 1\ Mg$

   f. $2\ C_8H_{18} + 25\ O_2 \rightarrow 16\ CO_2 + 18\ H_2O$
   g. $1\ N_2 + 3\ H_2 \rightarrow 2\ NH_3$
   h. Sodium chloride and Fluorine mix to create Sodium fluoride and Chlorine

      $2\ NaCl + 1\ F_2 \rightarrow 2\ NaF + 1\ Cl_2$

i. 1 $FeCl_3$ + 3 NaOH → 1 $Fe(OH)_3$ + 3 NaCl

j. $C_6H_{12}O_6$ + 6 O_2 → 6 CO_2 + 6 H_2O

8. Identify each of the reactions in question 7.

a. Decomposition

b. Double Displacement

c. Synthesis

d. Double Displacement (Neutralization)

e. Single Displacement

f. Combustion

g. Synthesis

h. Single Displacement

i. Double Displacement

j. Combustion

9. Predict the products in the following questions

a. Mg + Fe_2O_3 → Fe + MgO

b. C_2H_4 + O_2 → H_2O + CO_2

c. NaOH + KNO_3 → $NaNO_3$ + KOH

d. H_2O → H_2 + O_2

e. NaOH + HCl → H_2O + NaCl

10. Determine the colour of each chemical with the listed pH indicator

a. Vinegar with Blue litmus paper — Red

b. Concentrated NaOH with phenolphthalein — Pink

c. Dilute HNO_3 with Universal Indicator — Yellow/Orange

d. Soap with Blue Litmus paper — Blue

11. Name each of the following

    a. HCl — Hydrochloric Acid

    b. Ca(OH)2 — Calcium Hydroxide

    c. NH_4OH — Ammonium Hydroxide

12. What is the chemical formula for each of the following chemicals

    a. Sulfuric Acid — H_2SO_4

    b. Sodium hydroxide — NaOH

    c. Nitric Acid — HNO_3

13. Describe what is wrong with this scenario.

    146grams of Aluminum powder is reacted with 360grams powdered Iron (III) oxide. The reaction gives lots of light and heat. In the end, when the reaction has ended, there is 306g of Aluminum oxide and 208grams of liquid iron.

    The conservation of mass describes that matter cannot be destroyed or created, only rearranged. The total mass of all reactants is 146 + 360 = 506 grams. The total mass of all products is 306 + 208 = 514 grams. The two masses do not match, indicating that this reaction did not occur in the way it is described, due to breaking the conservation of mass.