**Quiz 2**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Identify each reaction by what the atoms do (5 points):
   1. SO­3 (g) + H2O (l) → H2SO4 (l) \_\_\_\_\_\_\_synthesis reaction
   2. Fe2O3 (s) + 3 H2SO4 (aq) → 3 H2O (l) + Fe2(SO4)3 (aq) \_\_\_\_double displacement rxn
   3. 2 LiCO3 (s) Li2O (s) + 2 CO2 (g) \_\_\_\_\_\_decomposition rxn
   4. 2 C8H18 (l) + 25 O2 (g) → 16 CO2 (g) + 18 H2O (l) \_\_\_combustion rxn
   5. Zn (s) + 2 HCl (aq) → H2 (g) + ZnCl2 (aq) \_\_\_\_single replacement rxn
2. Boron, lithium, nitrogen, and neon each has two stable isotopes. In which of the following pairs of isotopes is the heavier isotope more abundant (4 points)?
   1. 10B or 11B (average atomic mass, 10.81 amu) \_\_\_\_\_\_\_\_yes, 11B
   2. 6Li or 7Li (average atomic mass, 6.941 amu) \_\_\_\_\_\_\_\_yes, 7Li
   3. 14N or 15N (average atomic mass, 14.01 amu) \_\_\_\_\_\_\_no, 14N
   4. 20Ne or 22Ne (average atomic mass, 20.81 amu) \_\_\_\_\_\_\_no, 20Ne
3. Indicate if each of the following statements is true or false and explain your answer (5 points):

|  |  |  |
| --- | --- | --- |
|  | The proton is a negatively charged particle. | False, a proton is positively charge. |
|  | The neutron is 2000 times as heavy as a proton. | False, the neutron and the proton are both about 1 amu. |
|  | The atomic mass unit is based on a carbon atom with 6 protons and 6 neutrons. | True |
|  | The nucleus is the largest part of the atom. | False, the nucleus is the smallest part of the atom, but the heaviest. |
|  | The electrons are located outside the nucleus. | True |

1. Give three properties that enable a person to distinguish between table sugar, water, and oxygen (3 points).

We can distinguish between table sugar, water, and oxygen by examining their physical states (sugar is a solid, water is a liquid, and oxygen is a gas) and by their densities, melting points, and boiling points.

1. What are the three types of electrolytes (3 points)? Nonelectrolytes, strong/weak electrolytes