Review # 1 Assignment- Unit 1- Matter

Fill in the blank:

1. Anything that has mass and occupies space is called Matter.
2. A mixture in which the composition is uniform throughout: homogeneous.
3. The quality or condition of a substance that can be observed or measured without changing the substance's composition: physical property.
4. The scientist credited with the arrangement of the periodic table is: Mendeleev.
5. The smallest particle of an element that retains its identity in a chemical reaction: atom.
6. The simplest form of matter that has a unique set of properties: element.
7. A neutral group of atoms joined together by covalent bonds: molecule.
8. A substance that contains two or more elements chemically combined in a fixed proportion compound.
9. Group 1 (1A) are known as the: alkali metals.
10. How many orbitals are in each d sublevel as described in the Quantum Mechanical Model? 5
11. The subatomic particles involved in all bonds are called electrons
12. What is the abbreviated electron configuration for Ca? [Ar] $4s^2$
13. What is the charge of a cation: positive
14. Give an example of a diatomic element: O_2, N_2, I_2 etc...
15. What is the total number of electrons in the outermost shell of a boron atom? 3

Questions:

1. Calculate the atomic mass of bromine. The two isotopes of bromine have atomic masses and relative abundances of 78.92 amu (50.69%) and 80.92 amu (49.31%).

$(78.92 \times 0.5069) + (80.92 \times 0.4931) = 79.90\text{amu}$

$40.00\text{amu} + 39.90\text{amu}$

2. Fill in the blanks using the periodic table where needed:

Element Name	Mass Number	Atomic Number	Number of Protons	Number of Electrons	Number of Neutrons
copper - 64	64	29	29	29	35
oxygen-16	16	8	8	8	8
oxygen-16	16	8	8	8	8
calcium-41	41	20	20	20	21

3. Write the ground state (unabbreviated) electron configurations of the following elements:

1) iron: $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^6$

2) silicon: $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^2$

4. Determine what elements are denoted by the following electron configurations:

1) $1s^2 2s^2 2p^6 3s^2 3p^4$ Sulfur

2) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1$ rubidium