Periodic Table and Intro Chemistry

Choose one answer per question. Circle A, B, C, or D.

1. Which symbol identifies the element oxygen on a periodic table?
   A. O
   B. Ox
   C. Og
   D. Os

2. On a standard periodic table, what is a vertical column of elements called?
   A. An isotope
   B. A period
   C. A group
   D. A shell

3. A classroom chart places neon directly above argon. Which element family do both belong to?
   A. Halogens
   B. Noble gases
   C. Alkali metals
   D. Alkaline earth metals

4. A pinch of salt dissolves completely in a cup of water. How should the clear liquid be classified?
   A. Pure element
   B. Heterogeneous mixture
   C. Pure compound
   D. Homogeneous mixture

5. In one molecule of CO_2, how many oxygen atoms are present?
   A. One
   B. Two
   C. Three
   D. Zero

6. Two neutral atoms each have 13 protons, but one has an extra neutron. What must both atoms be?

A. Aluminum
B. Silicon
C. Magnesium
D. Phosphorus

7. A neutral magnesium atom has 12 electrons. How many remain after it becomes Mg^{2+}?

A. 14
B. 12
C. 13
D. 10

8. A diagram shows two hydrogen atoms sharing a pair of electrons. Which bond does the pair represent?

A. Metallic bond
B. Ionic bond
C. Covalent bond
D. Hydrogen bond

9. Boron-10 and boron-11 each have five protons. How many neutrons do they have, in that order?

A. Five and six
B. Five and five
C. Six and five
D. Ten and eleven

10. Aluminum ions have charge 3+ and oxide ions have charge 2−. Which formula balances the charges?

A. AlO_2
B. AlO
C. Al_3O_2
D. Al_2O_3

11. Measured covalent radii are 64 pm for fluorine, 99 pm for chlorine and 114 pm for bromine. Which pattern do they illustrate?

A. All three atoms have the same radius
B. Radius decreases down this group
C. Radius increases down this group
D. Radius is largest for the middle element

12. Which pair has the same number of electrons? The atomic numbers are neon 10, sodium 11 and magnesium 12.

A. Na^+ and neutral Mg
B. Na^+ and Ne
C. Ne and Mg^+
D. Neutral Na and Mg^{2+}

13. Which coefficient balances the oxygen atoms in $2\ C_4H_{10} + ?\ O_2 \rightarrow 8\ CO_2 + 10\ H_2O$?

A. 26
B. 10
C. 16
D. 13

14. In a fictional sample, 90% of the atoms have a mass of 20.0 u and 10% have a mass of 22.0 u. What is the sample’s mean atomic mass?

A. 20.2 u
B. 20.9 u
C. 21.0 u
D. 21.8 u

15. A bromine ion has 35 protons, 46 neutrons and 36 electrons. Which isotope and charge match those counts?

A. Bromine-82 with a negative charge
B. Bromine-81 with a positive charge
C. Bromine-81 with a negative charge
D. Bromine-46 with a positive charge