Chapters 2 & 3: Atoms, Elements, Compounds, Mole

1. How many moles of oxygen atoms are present in one mole of aluminum sulfate, \( \text{Al}_2(\text{SO}_4)_3 \)?

A) 4  
B) 8  
C) 12  
D) \( 7.23 \times 10^{24} \)  
E) \( 4.82 \times 10^{24} \)

2. How many protons, neutrons, and electrons are in one ion of \(^{36}\text{S}^{2-}\)?

A) 16 protons, 20 neutrons, and 18 electrons.  
B) 20 protons, 16 neutrons, and 16 electrons.  
C) 16 protons, 20 neutrons, and 14 electrons.  
D) 16 protons, 20 neutrons, and 16 electrons.  
E) 0 protons, 36 neutrons, and 18 electrons.

3. Which two elements are likely to form an ionic compound with the formula \( \text{M}_3\text{X} \)?

A) Li and I  
B) Na and N  
C) Al and Br  
D) Ca and P  
E) K and O

4. Which compound is named correctly?

A) \( \text{CaO} \) – Calcium (II) monoxide  
B) \( \text{P}_2\text{O}_5 \) – Diphosphorus pentoxide  
C) \( \text{Al}_2\text{S}_3 \) – Dialuminum trisulfide  
D) \( \text{PbI}_4 \) – Lead iodide  
E) \( \text{H}_2\text{S} \) – Sulfuric Acid

5. Determine the molecular formula of a compound that has a molecular weight of 183 g/mol and an empirical formula of \( \text{C}_2\text{H}_5\text{O}_2 \).

A) \( \text{C}_3\text{H}_7\text{O}_3 \)  
B) \( \text{C}_6\text{H}_{13}\text{O}_6 \)  
C) \( \text{C}_4\text{H}_{10}\text{O}_4 \)  
D) \( \text{C}_2\text{H}_5\text{O}_2 \)  
E) \( \text{C}_8\text{H}_{20}\text{O}_8 \)