Sample Questions for the Chemistry Placement Exam

Note: These questions are intended to represent the general level of difficulty and areas of coverage of the Chemistry Placement Exam. They are NOT intended to be a complete representation of the specific types of questions to be found on the exam.

1. Aluminum reacts with element X to form a compound with the formula Al₂X₃. Element X exists as diatomic molecules, X₂, in the gaseous state at normal temperature and pressure. Element X must be:
   a) Nitrogen
   b) Oxygen
   c) Sulfur
   d) Chlorine

2. What is the coefficient of O₂ when the following equation is balanced?
   \[ \text{C}_2\text{H}_4\text{O} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O} \]
   a) 2
   b) 3
   c) 4
   d) 5

3. How many moles of GeH₄ are needed to form 8.00 moles of GeF₃H according to the following reaction?
   \[ \text{GeH}_4 + 3\text{GeF}_4 \rightarrow 4 \text{GeF}_3\text{H} \]
   a) 2.00
   b) 4.00
   c) 8.00
   d) 16.00

4. According to its location in the periodic table, the element bromine (element # 35) is best described as:
   a) A metal
   b) A nonmetal
   c) A transition metal
   d) A metalloid

5. Which of the following species is neither acidic nor basic when dissolved in water?
   a) HCl
   b) NH₃
   c) NaCl
   d) NaHCO₃

6. To the correct number of significant figures, the result of the following calculation
   \[ \frac{(11.13 - 2.6) \times 10^4}{103.15 \times 10^{-6}} \]
   should be reported as:
   a) 8.27 x 10⁸
b) $8.3 \times 10^{-4}$
c) $8.3 \times 10^8$
d) $8.27 \times 10^{-8}$