Standardized Test Prep

Answer the following items on a separate piece of paper.

MULTIPLE CHOICE

1. According to the law of conservation of mass, the total mass of the reacting substances is
- **A.** always more than the total mass of the products.
- **B.** always less than the total mass of the products.
- **C.** sometimes more and sometimes less than the total mass of the products.
- **D.** always equal to the total mass of the products.

2. To balance a chemical equation, you may adjust the
- **A.** coefficients.
- **B.** subscripts.
- **C.** formulas of the products.
- **D.** either the coefficients or the subscripts.

3. Which is the correct chemical equation for the following formula equation: $(NH_4)_2S \longrightarrow NH_3 + H_2S$?
- **A.** $2(NH_4)_2S \longrightarrow 2NH_3 + H_2S_2$
- **B.** $2(NH_4)_2S \longrightarrow 2NH_3 + H_2S$
- **C.** $(NH_4)_2S \longrightarrow 2NH_3 + H_2S$
- **D.** None of the above

4. Select the missing reactant(s) for the double-displacement reaction that produces PF_5 and $AsCl_3$.
- **A.** PCl_5 and AsF_3
- **B.** PCl_3 and AsF_5
- **C.** PCl_3 and AsF_3
- **D.** None of the above

5. Select the missing reactant for the following combustion reaction: $2\_\_\_\_\_ + 15O_2 \longrightarrow 14CO_2 + 6H_2O$.
- **A.** $C_{14}H_{12}$
- **B.** $C_{14}H_{12}O_4$
- **C.** C_7H_6
- **D.** $C_7H_6O_2$

6. A mixture consists of Ag, Pb, and Fe metals. Which of these metals will react with $ZnCl_2$?
- **A.** Ag(s)
- **B.** Pb(s)
- **C.** Fe(s)
- **D.** None of these metals

7. Which of the following statements is true about the reaction $2F_2 + 2H_2O \longrightarrow 4HF + O_2$?
- **A.** Two grams of O_2 are produced when 2 g F_2 reacts with 2 g H_2O.
- **B.** Two moles of HF are produced when 1 mol F_2 reacts with 1 mol H_2O.
- **C.** For every 2 mol O_2 produced, 6 mol HF are produced.
- **D.** For every 1 mol H_2O that reacts, 2 mol O_2 are produced.

SHORT ANSWER

8. Determine the products and write a balanced equation for the reaction of solid magnesium and water.

9. A precipitation of iron(III) hydroxide is produced by reacting an aqueous solution of iron(III) chloride with an aqueous solution of sodium hydroxide. Write a balanced chemical equation.

EXTENDED RESPONSE

10. List the hypothetical metals A, E, M, and R in increasing order of reactivity by using the reaction data in the table below. The reaction of interest is of the form $C + ZX \longrightarrow CX + Z$. Explain your reasoning.

	AX	EX	MX	RX
A	——	no reaction	reaction	no reaction
E	reaction	——	reaction	reaction
M	no reaction	no reaction	——	no reaction
R	reaction	no reaction	reaction	——

11. Calcium hypochlorite, $Ca(OCl)_2$, is a bleaching agent produced from sodium hydroxide, calcium hydroxide, and chlorine. Sodium chloride and water are also produced in the reaction. Write the balanced chemical equation. If 2 mol NaOH react, how many moles of calcium hypochlorite can be produced?

Test TIP Focus on one question at a time unless you are asked to refer to previous answers.