PART A: MULTIPLE CHOICE (10 MARKS)

Choose the best response in each case and place your answer in the appropriate space on your answer sheet.

1. What does the " + " mean in the chemical equation:

   phosphorus + oxygen → phosphorus(V) oxide

   (a) a skeleton equation (b) to produce
   (c) reacts with (d) a coefficient

2. In all chemical reactions the:
   (a) mass of reactants equals the mass of products.
   (b) mass and volume of both reactants and products must be equal.
   (c) volume of reactants equals the volume of products.
   (d) volumes of combining reactants must be equal.

3. When the following equation is balanced, the coefficients for P and O_2 in order are:

   $$P + O_2 \rightarrow P_2O_5$$

   (a) 6, 4 (b) 4, 5
   (c) 4, 6 (d) 5, 4

4. Which of the following equations is correctly balanced?
   (a) $Zn + H_2SO_4 \rightarrow ZnSO_4 + 2H_2$
   (b) $H_2O + Na \rightarrow NaOH + H_2$
   (c) $2KClO_3 \rightarrow KCl + 3O_2$
   (d) $2H_2O + Ca \rightarrow Ca(OH)_2 + H_2$

5. A synthesis chemical reaction can be compared to:
   (a) two dancing couples switching partners.
   (b) a single person "cutting in" on a dancing couple.
   (c) a dancing couple breaking up.
   (d) two single people joining for a dance.

6. Using the same choices as #5, a double displacement chemical reaction can be compared to?

7. A balanced chemical equation takes into account the theory that:
   (a) compounds and elements remain unchanged in a chemical reaction.
   (b) atoms are neither created nor destroyed in chemical reactions.
   (c) the total mass always increases during a chemical reaction.
   (d) the mass of any gases involved can be ignored.

8. What type of reaction does the following equation represent?

   $$Ag_2S \rightarrow 2Ag + S$$

   (a) synthesis (b) decomposition
   (c) single displacement (d) double displacement

9. Which of the following is a <u>single displacement</u> reaction?
   (a) $2H_2 + O_2 \rightarrow 2H_2O$
   (b) $2KClO_3 \rightarrow 2KCl + 3O_2$
   (c) $H_2SO_4 + Mg \rightarrow MgSO_4 + H_2$
   (d) $2KI + Pb(NO_3)_2 \rightarrow 2KNO_3 + PbI_2$

10. Predict the product(s) for the following <u>single displacement</u> reaction.

    $H_2 + CuO \rightarrow$ _____

    ① CuH_2 ② CuO_2 ③ H_2O ④ Cu ⑤ $Cu(OH)_2$

    (a) ③ and ④ only (b) ⑤ only
    (c) ① and ② only (d) ④ and ⑤ only

PART B: MATCH (5 MARKS)

Match the definition from the 1st column to the best term in the 2nd column and place the matching letter in the appropriate space on your answer sheet.

1. The starting material in a chemical reaction.
2. Can be changed from one form to another but is always conserved.
3. Representation of a chemical reaction using words.
4. Reaction where a substance reacts quickly with oxygen to release energy.
5. Chemical reaction that releases heat (energy) to the surroundings.

A) balanced chemical equation
B) coefficient
C) combustion
D) endothermic reaction
E) energy
F) exothermic reaction
G) product
H) reactant
I) skeleton equation
J) word equation

SNC2D CHEMISTRY: EQUATIONS & TYPES OF REACTIONS QUIZ#3

PART A: MULTIPLE CHOICE (10 MARKS)

1	2	3	4	5	6	7	8	9	10

PART B: MATCH (5 MARKS)

1	2	3	4	5

PART C: SHORT ANSWER (40 MARKS)

Answer the following questions in the space provided. If more space is needed use the back of this sheet.

{2} 1. Examine the following word equation: propane + oxygen → carbon dioxide + water

(a) List one reactant: _____ (b) List one product: _____

{7} 2. (i) Classify each of the chemical reactions below as either (S) synthesis, (D) decomposition, (SD) single displacement, (DD) double displacement or (C) combustion. Place your answer in the space provided.

{12} (ii) Balance each of the reactions below. (Be sure to use the number 1 when only 1 molecule is needed!)

____	(a)	Na	+	I_2	→	NaI			
____	(b)	N_2	+	H_2	→	NH_3			
____	(c)	HCl	+	$Ca(OH)_2$	→	$CaCl_2$	+	H_2O	
____	(d)	K_3PO_4	+	HCl	→	KCl	+	H_3PO_4	
____	(e)	KI	+	$Pb(NO_3)_2$	→	KNO_3	+	PbI_2	
____	(f)			H_2O_2	→	H_2O	+	O_2	
C	(g)	C_2H_6	+	O_2	→	CO_2	+	H_2O	

{4} 3. Complete the following word equations.

(a) zinc iodide + chlorine → _____ + zinc chloride

(b) aluminum + _____ → aluminum bromide

(c) lead (II) nitrate + _____ → lead (II) sulfide + sodium nitrate

4. Write word equations for each of the chemical reactions below.

{3} (a) NaCl produces Na and Cl

_____

{4} (b) $Ca(OH)_2$ and HBr react to form H_2O and $CaBr_2$

_____

{3} (c) $BaCO_3$ reacts when heated to produce BaO and CO_2

_____

{5} 5. Use the law of conservation of mass to answer the following:

(a) When 74.1 g of calcium is reacted with oxygen, 75.6 g of calcium oxide is produced. What mass of oxygen was used in the reaction? (a) _____

(b) 36.1 g of sulfur reacts with 13.0 g of copper to produce copper(II) sulfide. What is the mass of copper(II) sulfide produced? (b) _____

(c) What law did you use to answer these questions? (c) _____