

## FIRST: CHOOSE THE CORRECT ANSWER.

- 1) 1.52 g sample of nitrogen oxide contains 0.96 g of oxygen. The empirical formula for this nitrogen oxide is:

☐ A)  $\text{N}_2\text{O}_5$       B)  $\text{N}_2\text{O}_3$       C)  $\text{NO}_2$       D)  $\text{NO}$

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- 2) The mass (in g) of  $\text{CF}_4$  that contains  $3.2 \times 10^{24}$  atom of fluorine "F" is.

☐ A) 109.8      B) 112.5      C) 116.9      D) 105.7

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- 3) The mass in grams of  $\text{Na}_3\text{N}$  that contains  $1.3 \times 10^{23}$  sodium "Na" atoms is:

☐ A) 6.0      B) 7.0      C) 8.0      D) 9.0

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- 4) The percent by mass of copper metal "Cu" in the mineral chalcopyrite " $\text{CuFeS}_2$ " is:

☐ A) 39.25      B) 37.85      C) 36.18      D) 34.62

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- 5) The volume in ml of 0.251 M KI solution that contains 13.5 g of KI is:

☐ A) 324      B) 345      C) 363      D) 382

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- 6) If equal masses of oxygen gas " $\text{O}_2$ " and carbon dioxide gas " $\text{CO}_2$ " are in two separate containers of equal volume and at equal temperature. Which one of the following statements is true?

- 1- The average kinetic energy of an  $\text{O}_2$  molecule is greater than that of a  $\text{CO}_2$  molecule.
- 2- The average kinetic energy of a  $\text{CO}_2$  molecule is greater than that of an  $\text{O}_2$  molecule.
- 3- The pressure inside the  $\text{O}_2$  container is higher than that inside the  $\text{CO}_2$  container.
- 4- The pressure inside the  $\text{CO}_2$  container is higher than that inside the  $\text{O}_2$  container.

☐ A) 1, 3 only      B) 2, 4 only      C) 3 only      D) 4 only

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- 7) A closed gas cylinder contains exactly equal masses of the three gases  $\text{CO}_2$ ,  $\text{N}_2$  and  $\text{O}_2$ . Which one of the following statements is true?

- ☐ A) The three partial pressures for the three gases are exactly equal.  
B) The partial pressure of the  $\text{CO}_2$  gas is the highest.  
C) The partial pressure of the  $\text{O}_2$  gas is the highest.  
D) The partial pressure of the  $\text{N}_2$  gas is the highest.
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- 8) The constant "b" that appears in the van der Waals ideal gas equation corrects for:

- ☐ A) The average speed of the gas molecules.  
B) The volume of the gas molecules.  
C) The attractive forces between the gas molecules.  
D) The average kinetic energy of the gas molecules.
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