72. Given the reaction:

    $$2Al + 3H_2SO_4 \rightarrow 3H_2 + Al_2(SO_4)_3$$

    The total number of moles of H_2SO_4 needed to react completely with 5.0 moles of Al is

    (1) 2.5 moles   (3) 7.5 moles

    (2) 5.0 moles   (4) 9.0 moles
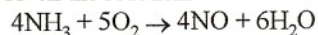
73. Given the *unbalanced* equation:

    $$\_N_2(g) + \_H_2(g) \rightarrow \_NH_3(g)$$
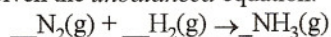
    When the equation is balanced using smallest whole-number coefficients, the ratio of moles of hydrogen consumed to moles of ammonia produced is
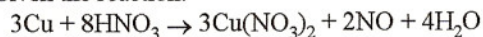
    (1) 1:3   (3) 2:3

    (2) 3:1   (4) 3:2

74. Given the reaction:

    $$4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$$

    What is the maximum number of moles of H_2O that can be produced when 2.0 moles of NH_3 are completely reacted?

    (1) 1.0   (3) 3.0

    (2) 2.0   (4) 6.0

75. Given the reaction:

    $$3Cu + 8HNO_3 \rightarrow 3Cu(NO_3)_2 + 2NO + 4H_2O$$

    The total number of grams of Cu needed to produce 1.0 mole of $Cu(NO_3)_2$ is

    (1) 32   (3) 128

    (2) 64   (4) 192

76. Given the reaction:

    $$2C_2H_2(g) + 5O_2(g) \rightarrow 4CO_2(g) + 2H_2O(g)$$

    What is the total number of grams of $O_2(g)$ needed to react completely with 0.50 mole of $C_2H_2(g)$?

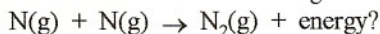   (1) 10. g   (3) 80. g

    (2) 40. g   (4) 160 g

77. Given the reaction:

    $$Cu + 4HNO_3 \rightarrow Cu(NO_3)_2 + 2H_2O + 2NO_2$$
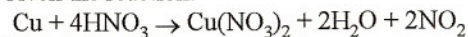
    What is the total mass of H_2O produced when 32 grams of Cu is completely consumed?

    (1) 9.0 g   (3) 36 g

    (2) 18 g   (4) 72 g

78. Which statement is true concerning the reaction

    $$N(g) + N(g) \rightarrow N_2(g) + energy?$$

    (1) A bond is broken and energy is absorbed.

    (2) A bond is broken and energy is released.

    (3) A bond is formed and energy is absorbed.

    (4) A bond is formed and energy is released.

79. Given the equation:

    $$I + I \rightarrow I_2$$
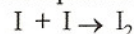
    As the atoms of the iodine react to form molecules of iodine, the stability of the iodine

    (1) decreases   (3) remains the same

    (2) increases

80. Which properties are characteristic of the Group 1 metals?

    (1) high reactivity and the formation of stable compounds

    (2) high reactivity and the formation of unstable compounds

    (3) low reactivity and the formation of stable compounds

    (4) low reactivity and the formation of unstable compounds

81. Given the electron dot formula:

    $$H:\overset{\cdot\cdot}{\underset{\cdot\cdot}{X}}:$$

    Which atom represented as X would have the *least* attraction for the electrons that form the bond?

    (1) F   (3) I

    (2) Cl   (4) Br

82. Which formula represents a substance with the greatest degree of ionic bonding?

    (1) PBr_3 (3) NH_3

    (2) $MgBr_2$ (4) CO

83. Which bond has the least ionic character?

    (1) KBr   (3) MgO

    (2) HF   (4) BrCl

84. Which is the formula of an ionic compound?

    (1) SO_2 (3) CH_3OH

    (2) CO_2 (4) NaOH

85. Which compound in the solid state has a high melting point and conducts electricity when it is liquefied?

    (1) carbon dioxide   (3) hydrogen chloride

    (2) silicon dioxide   (4) potassium chloride

86. The bonding in NH_3 is most similar to the bonding in

    (1) H_2O (3) MgO

    (2) NaCl   (4) KF

87. Which substance is a good conductor of electricity in both the solid and liquid phases?

    (1) a metallic substance   (3) a network substance

    (2) an ionic substance   (4) a molecular substance