1) The type of bond formed when two atoms share a pair of electrons is called

    (A) ionic.   (B) bivalent.   (C) double.   (D) electrovalent.   (E) covalent.

2) Which particle has the same number of electrons as an atom of argon?

    (A) Ca^{2+} (B) Na^+ (C) K^0 (D) Cl^0

3) A gas behaves most nearly like an ideal gas when under conditions of
    (A)   high pressure and low temperature.
    (B)   low pressure and high temperature.
    (C)   low pressure and low temperature.
    (D)   high pressure and high temperature.
    (E)   low pressure and absolute zero temperature.

4) Equal volumes of ideal gases contain the same number of molecules, provided the gases have equal
    (A)   masses.
    (B)   pressures.
    (C)   temperatures.
    (D)   temperatures and pressures.

5) Which statement describes a physical property of elemental oxygen?

    (A)   Oxygen has a density of 1.43 g/L.
    (B)   Oxygen supports the burning of paper.
    (C)   Oxygen is needed for human metabolism.
    (D)   Oxygen combines with iron to form rust.

6) Which is characteristic of Group 17 elements in the periodic table?

    (A)   All are easily oxidized.
    (B)   All tend to gain one electron.
    (C)   All are found free in nature.
    (D)   The attraction for electrons increases with increasing atomic number.
    (E)   The first ionization potential increases with increasing atomic number.

7) The size of halide ions

    (A)   increases from F^- to I^-.
    (B)   increases from I^- to F^-.
    (C)   is the same for all halides.
    (D)   is smaller than the size of the corresponding atom.
    (E)   depends mainly on which isotope forms the ion.

8) What volume of carbon dioxide, CO_2, measured at STP is produced when 6.00 g of ethane, C_2H_6, is burned with excess oxygen, O_2?

$$2C_2H_{6(g)} + 7O_{2(g)} \rightarrow 4CO_{2(g)} + 6H_2O_{(g)}$$
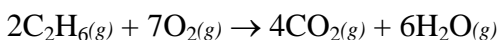
Atomic Molar Masses	
C	12.0 g·mol^{-1}
H	1.0 g·mol^{-1}

(A)　　2.24 L　(B)　　3.73 L　(C)　　4.48 L　(D)　　8.96 L

9) How many molecules are in 11.0 g of carbon dioxide, CO_2?

Atomic Molar Masses	
C	12.0 g·mol^{-1}
O	16.0 g·mol^{-1}

(A)　　1.50×10^{23}　　　　　(C)　　4.40×10^{23}

(B)　　2.24×10^{23}　　　　　(D)　　5.60×10^{23}

10) Two grams of hydrogen contain approximately the same number of molecules as

Molar Masses	
H_2	2. g·mol^{-1}
He	4. g·mol^{-1}
H_2O	18. g·mol^{-1}
N_2	28. g·mol^{-1}
O_2	32. g·mol^{-1}
SO_2	64. g·mol^{-1}

(A)　　36 g of water.　(D)　　28 g of nitrogen.

(B)　　16 g of oxygen.　　(E)　　32 g of sulfur dioxide.

(C)　　8 g of helium.