Chemistry – Chapter 10 Book problems #2 (summer school): Mole calculations: gas volume & density

1. What is the volume of these gases at STP?

    a. 3.20×10^{-3} mol CO_2

    b. 3.70 mol N_2

    c. 0.960 mol CH_4

2. At STP, how many moles are in these volumes of gases?

    a. 67.2 L SO_2

    b. 0.880 L He

    c. 1.00×10^{3} L C_2H_6

3. A gaseous compound composed of sulfur and oxygen has a density of 3.58 g/L at STP. What is the molar mass of this gas?

4. What is the density of krypton gas at STP?

5. Three balloons filled with three different gaseous compounds each have a volume of 22.4 L at STP. Do these balloons have the same mass or contain the same number of molecules? Explain.

6. The density of an elemental gas is 1.7824 g/L at STP. What is the molar mass of the element?

7. The densities of gases A, B, and C at STP are 1.25 g/L, 2.86 g/L, and 0.714 g/L respectively. Calculate the molar mass of each substance. Identify each substance as ammonia (NH_3), sulfur dioxide (SO_2), chlorine (Cl_2), nitrogen (N_2), or methane (CH_4).