HW 7.22: Moles & Mass-Mole-Particle Conversions

Directions: Calculate and show all work. Include units. Circle final answer. (25pts)

1. How many moles are there in 25.0 g of potassium nitrate?

2. How many moles are there in 100.0 milligrams of sodium hydroxide?

3. What is the mass in grams of 10.5 mol of NH₃?

4. What is the mass in grams of 0.00844 mol of NiSO₄?

5. What is the mass in grams of $4.50 \times 10^{21}$ molecules of glucose, C₆H₁₂O₆?
6. How many molecules are there in 75.1 grams of PCl$_3$?

7. How many atoms of chlorine are there in 75.1 grams of PCl$_3$?

8. Which contains the larger number of molecules – 10.0 g of H$_2$O or 10.0 g H$_2$O$_2$? Show evidence for your answer.

9. Which contains the greatest mass of oxygen: 0.75 mol of ethanol (C$_2$H$_5$OH), 0.60 mol of formic acid (HCO$_2$H), or 1.0 mol of water (H$_2$O)? Explain why.

10. A 55-kg woman has 7.5 × 10$^{-3}$ mol of hemoglobin (molar mass = 64,456 g/mol) in her blood. How many hemoglobin molecules is this? What is this quantity in grams?