Chemistry 130
Worksheet 2

Name: ______________________________

1. (1 pt.) *A. Find the number of moles of Cr in 97.3 g of Cr. (Cr = 52.0 amu)
   B. Find the number of grams of H₂SO₃ in 1.35 × 10²⁴ molecules of H₂SO₃ (H = 1.0, S = 32.0, O = 16.0 amu)

2. (1.0 pt.) Balance each of the following chemical equations.

   **A. _____CH₄ + _____Cl₂ → _____CHCl₃ + _____HCl
   B. _____CO + _____Fe₂O₃ → _____CO₂ + _____Fe

3. Given the following balanced chemical equation: C₃H₈ + 5O₂ → 3CO₂ + 4H₂O (C = 12.0, H = 1.0, O = 16.0 amu)

   ***A. (0.5 pt.) Calculate the theoretical yield of CO₂ when 30.0 g of C₃H₈ reacts with an excess of O₂.
   B. (0.5 pt.) Calculate the theoretical yield of CO₂ when 30.0 g of C₃H₈ reacts with 115 g O₂.

4. (1 pt.) Find the molar concentration of KOH in a solution prepared by dissolving 98.2 g of KOH in enough H₂O to make 250 mL of solution. (K = 39.1, H = 1.0, O = 16.0 amu)

5. (1.0 pt.) Find the volume of 2.50 M C₆H₁₂O₆ that contains 90.0 g of C₆H₁₂O₆. (H = 1.0, C = 12.0, O = 16.0 amu)

6. (0.8 pt.) Indicate the charge expected when each of the following form ions.

   Ca _____, Te _____, Ga _____, I _____
7. (0.4pt.) Give the formula and charge for each of the following polyatomic ions:

- Ammonium ion _______________
- Bicarbonate ion _______________
- Phosphate ion _______________
- Nitrite ion _______________

8. (0.8pt.) Name each of the following compounds:

- KI _______________
- Fe₂O₃ _______________
- CoCl₃ _______________
- Mg(OH)₂ _______________

9 (0.8pt.) Give the formula for each of the following:

- Stannic oxide _______________
- Sodium oxide _______________
- Lead(IV) sulfide _______________
- Zinc nitrate _______________

10. (1.0pt.) Draw the Lewis electron dot structure for each of the following. Show electrons needed, available, and shared calculations.

A. AsCl₃

B. C₂H₄

11. (0.2pt.) In the molecule CH₃OH there would be _____ polar bonds.

12. (1.0pt.) Given the atomic weights, calculate the molecular weight of each of the following. (C = 12.0, H = 1.0, O = 16.0, Ca = 40.0, N = 14.0amu)

A. HNO₃ _______________

B. Ca(HCO₃)₂ _______________