General Chemistry
Mr. MacGillivray
Test Review: Chapters 5 & 9

1. Decide whether each of the following compounds is ionic or molecular (covalent). Mark it as either "I" or "M".
   a. potassium sulfide
   b. aluminum bromide
   c. calcium acetate
   d. calcium carbonate
   e. iron (II) permanganate
   f. sodium dichromate
   g. xenon tetrafluoride
   h. oxygen difluoride
   i. sulfur trioxide
   j. tetraphosphorus pentoxide
2. Write the formula for each of the above compounds.
3. Decide whether each of the following compounds is ionic or molecular (covalent).
   a. LiBr
   b. $AgNO_3$
   c. $(NH_4)_2SO_4$
   d. $PbSO_4$
   e. $NH_4C_2H_3O_2$
   f. PBr_3
   g. SO_2
   h. N_2O_3
   i. NO
4. Name each of the above compounds.

5. The practical difference between atomic mass and molar mass is that atomic mass is expressed in units of _____, whereas molar mass is expressed in these units:_____. Both masses have the same numerical value, though.

6. The number of apples in a dozen is _____. The number of donuts in a dozen is _____.

7. The number of atoms in a mole is _____. The number of molecules in a mole is _____.

8. What is the mass of a mole of carbon? What is the mass of a mole of carbon monoxide? What is the mass of a mole of carbon dioxide?

9. Which is bigger, 18.2 g of NH_3 or 1 mol NH_3?

10. Which is bigger, 4.387×10^{19} atoms of Fe or 2 moles of Fe?

11. Convert 54.7 g of NH_3 (ammonia) to moles of ammonia.

12. Convert 54.7 g of NH_3 to molecules of ammonia.

13. Convert 1.60×10^3 molecules of ammonia to moles of ammonia.

14. What is the mass of 1.60×10^3 molecules of ammonia?

15. What is the % composition, by mass, of barium nitrate, $Ba(NO_3)_2$?

16. A compound is found by chemical analysis to consist of 32.38% sodium, 22.65% sulfur, and 44.99% oxygen. Find its empirical formula.

17. The empirical formula for a compound is found to be P_2O_5. Further experimentation shows that the molar mass of the compound is 283.89 g/mol. Find the molecular formula of this compound.