Chemistry Review Questions

1. Find the formula or molecular mass for the following substances
   a. Br_2 159.8
   b. Fe_3O_4 231.55
2. Do the following conversions
   a. What is the mass in grams of 5 moles of CO_2 220.1 g
   b. How many moles are there in 1000 g of $C_8H_{10}O_5$ 5.37 mol
   c. How many atoms are there in 85.24 g of silver? 4.757×10^{23}
3. Write the formulas for the following compounds
   a. Potassium and chlorine KCl
   b. Iron (III) oxide Fe_2O_3
4. Write the empirical formula for the following
   a. N_2F_4 ___ NF_2 _____ b. $P_3N_3Cl_6$ ____ $PNCl_2$ _____
5. Convert the following
   a. .75 kilograms to milligrams ____ 750,000 mg _____
   b. 25 C to Kelvin _____ 298 K _____
   c. 2500 calories to Calories ___ 2.5 _____
   d. 2.30 kJ to J ____ 2300 J _____
   e. 2.5 atm to kPa _____ 250 kPa _____
   f. 110 kPa to mm Hg _____ 825 mmHg _____
6. Write and balance the equation for the following:
   a. Ammonia(g) + oxygen(g) → nitrogen(III) oxide(g) + water (g) $2NH_3(g) + 3O_2(g) \rightarrow N_2O_3(g) + 3H_20\ (g)$
7. Predict the products for the following and write a balanced equation:
   a. magnesium(s) + oxygen (g) → $2Mg\ (s) + O_2\ (g) \rightarrow 2\ MgO\ (s)$
8. Determine the mass of sodium chloride or table salt (NaCl) produced when 1.25 moles of chlorine gas reacts vigorously with sodium? $Cl_2 + 2Na \rightarrow 2NaCl$ 146 g NaCl
9. The pressure in an automobile tire is 1.88 atm at 25.0 C. What will be the pressure if the temperature warms up to 37.0 C. 1.96 atm
10. A liter of 2M NaOH solution contains how many grams of NaOH? 80g
11. If you dilute 20.0 mL of a 3.5 M solution to make 100.0 mL of solution, what is the molarity of the dilute solution? .70M
12. What are properties of acids and bases? (sour, sting, red litmus…bitter, slippery, blue litmus) among others
13. What is the definition of an Arrhenius Acid and Base? Acids add H+, Bases add OH-
14. What is the definition of a Bronsted-Lowry Acid and Base? Acid=H+ donor Base=H+ acceptor
15. What is a conjugate pair? Look in your book.
16. What do the numbers on the pH scale represent? (acids, bases, neutral) A=0-7, B=7-14, N=7
17. If the temperature of 34.4 g of ethanol increases from 25.0 C to 78.8 C, how much heat has been absorbed by the ethanol? The specific heat of ethanol is 2.44 J/g·C. 4520J
18. For the ideal gas law and the combined gas law, which variables are directly proportionate and indirectly proportionate? Look at your notes
19. What does STP stand for? What are the values? Standard Temperature & Pressure (0^oC and 1 atm)
20. What is a colloid? Solution that has particles dispersed throughout
21. What are the 5 types of reactions that we learned? Synthesis, decomposition, single replacement, double replacement, combustion
22. Write the expression for the equilibrium constant for: aA + bB ←→ cC + dD
23. What is Le Chatelier's principle and how do the stresses affect the equilibrium?