Chemistry 30: Unit 1 Review Hand In Assignment

Name: _____ School:_____

Include your answer with correct units and significant figures. If you use a formula, be sure to include it as well.

Using Math in Science…the first few questions don't necessarily relate specifically to chemistry, but are to assess formula work, units, significant figures and scientific notation.

1. Convert from 5.45 miles to cm (1 mi = 1.61 km). Show all of your work and put your answer into scientific notation. (2)

2. Convert from 2.18×10^6 seconds into days. Show all of your work. (2)

3. *Using formulas*; If a block of wood has dimensions of 4.55cm x 9.1cm x 2.54cm. Calculate:

   a. The volume of the block of wood (V = l x w x h) (2 marks)

   b. The total surface area of the block of wood (SA = 2lh + 2wh + 2lw) (2 marks)

4. Predict which (of the two elements given) will be more reactive. Circle your choice and *explain your reasoning*. (1 each)
   a. V and Rb

   b. Ne and O

   c. F and O

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5. *In your own words,* explain why **electronegativity** increases from left to right across a period and increases from the bottom to the top of a group. (2)

6. Think back to when you know about valence electrons and shell stability. Using what you now know about **ionization energy** and your previous valence electron know how, explain why metals have a low ionization energy. (2)

7. Write the formula for each of the following: (1 mark each)

   a. Nitrous acid _____

   b. Aluminum Hydroxide _____

   c. Sulfur hexafluoride _____

   d. Nickel (II) oxalate _____

8. Write the name of each of the following compounds: (1 mark each)

   a. $CuSO_4$ _____

   b. H_2SO_3 _____

   c. Cl_2O _____

   d. RbI _____

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9. Calculate the molar mass of the following molecules: (1 mark each)

a. $Ca(OH)_2$ b. $(NH_4)_2S$

10. How many molecules would 3.45 moles of methane (CH_4) represent? (1 mark)

11. What would be the mass of 4.56×10^{23} water molecules? (2 marks)

12. How much space would 39.9g of nitrogen gas occupy at SATP? (2 marks)

13. How many molecules are in a 33.5L sample of oxygen gas at STP? (2 marks)

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14. For the following chemical reactions:
    i. determine the type of reaction (1 mark)
    ii. determine the products (2 marks)
    iii. balance the equation (1 mark)

    a. $CuCl_{2(aq)}$ + $AgNO_{3(aq)}$ →

    b. $H_{2(g)} + Br_{2(g)}$ →

Balance the following equation:

$$\_\_C_3H_8 + \_\_O_2 \rightarrow \_\_CO_2 + \_\_H_2O$$

propane + oxygen → carbon dioxide + water

and answer questions #15 & #16 based on the balanced equation.

15. How many dm^3 of oxygen at STP would be required to react completely with 38.8g of propane? (3 marks)

** $1dm^3 = 1000mL$

16. How many grams of water can be generated from the combustion of 40.0g of propane in an excess of oxygen? (3 marks)

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17. What is the mass of mercury produced from the decomposition of 1.25 g of orange mercury(II) oxide? The atomic mass of mercury is 200.59 g/mol. The molar mass of orange mercury(II) oxide is 216.59 g/mol.
(4 marks)?

18. A. A compound contains 72.2g of magnesium and 27.8 grams of nitrogen. What is the percent composition of *magnesium*? (2 marks)

B. BONUS: What is the chemical formula for this compound? (1 mark)