

Name: _____
120 points
Dr. Jay H. Baltisberger

Test 1
Chemistry 121A
September 27, 1999

SHOW ALL CALCULATIONS & USE PROPER SIGNIFICANT FIGURES AND UNITS

$$N_A = 1 \text{ mole} = 6.02 \times 10^{23}$$

Multiple Choice Questions: Circle the single best answer. No penalty for guessing.

- Which SI unit indicates 10^{-3} grams? (4 points)
A) mg B) cg C) tg D) kg E) Mg
- Do the following arithmetic with correct significant figures: (4 points)
 $863 \times (1255 - (3.45 \times 10^8))$
A) 761511 B) 7.6151×10^5 C) 7.615×10^5 D) 7.62×10^5 E) 7.6×10^5
- What element has 12 neutrons, 10 protons and 10 electrons? (4 points)
A) ^{12}B B) ^{10}C C) ^{22}Ne D) ^{22}He E) ^{22}Ti
- What is the name of the ClO_4^- anion? (4 points)
A) chlorate B) chlorite C) perchlorate D) hypochlorite E) chloride
- How many moles are 44.0 g of CO_2 ? (4 points)
A) 1.00 B) 2.00 C) 3.00 D) 44.0 E) 1940
- A compound is made of only H, C and N. This compound has 3.73% by mass hydrogen, 44.44% by mass carbon and 51.83% nitrogen. What is the empirical formula of this compound? (4 points)
A) $\text{H}_4\text{C}_{44}\text{N}_{52}$ B) $\text{HC}_{11}\text{N}_{13}$ C) H_4CN D) HC_2N E) HCN
- Write the balanced chemical equation for the reaction of C_6H_{10} with O_2 to produce H_2O and CO_2 . Calculate the mass of CO_2 produced when 4.305 g of C_6H_{10} is reacted in excess oxygen. (10 points)

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8. Write out two additional atomic symbols which are isotopes of ^{132}Cs . (6 points)

9. Name the following ionic compounds. (4 points each)

$\text{Ca}(\text{NO}_2)_2$ _____

H_2CO_3 _____

Na_2SO_4 _____

Mg_3N_2 _____

10. Write the empirical formula for the following compounds. (4 points each)

iron (II) bromate _____

lithium phosphate _____

aluminum oxide _____

ammonium chloride _____

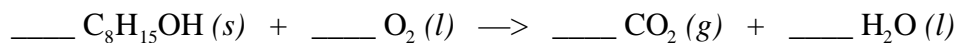
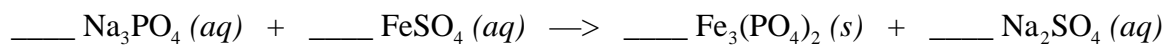
11. A Morgan silver dollar has a mass of 26.73 g. By law it was required to contain 90.0 % by mass silver, with the remainder being copper. When the coin was minted in the late 1800's, silver was worth \$1.18 per troy ounce (31.1 g). At this price, what was the value of the silver in the silver dollar? (8 points)

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12. Only two isotopes of boron occur naturally: ^{10}B (mass = 10.013 amu; abundance 19.78%) and ^{11}B (mass = 11.009 amu; abundance 80.22%). Calculate the average atomic mass (weight) of boron. (15 points)

13. Balance the following two chemical equations. (10 points)



14. Balance the following equation and calculate the amount of Cu which could be produced by reacting 5.00 g of Cu_2O and 15.00 g of CO. (15 points)

