

Name: _____
120 points
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Test 1
Chemistry 121A
September 30, 1996

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.

- Name the SI prefix used to indicate 10^6 . (3 points)
A) Mega (M) B) Kilo (k) C) Milli (m) D) Nano (n) E) Deci (d)
- How many significant figures are present in 0.0201? (3 points)
A) 2 B) 3 C) 4 D) 5 E) 6
- Which of the following has the highest charge to mass ratio (absolute value)? (3 points)
A) Sodium atom B) Neutron C) Electron D) Proton E) Alpha Particle
- What is the name of the CN^- anion? (3 points)
A) chloride B) carbonite C) carbonide D) cyanide E) hypocarbonite
- How many moles of carbon atoms are found in 6.0 moles of $\text{C}_3\text{H}_7\text{OH}$? (3 points)
A) 1.0 B) 2.0 C) 6.0 D) 18.0 E) 72.0
- Calculate the mass percent carbon in $\text{C}_3\text{H}_7\text{OH}$? (3 points)
A) 20.0 % B) 65.0 % C) 60.0 % D) 75.0 % E) 81.7 %
- Write the balanced chemical equation for the combustion (reaction with O_2) of C_2H_2 and calculate the mass of CO_2 produced when 2.6 g of C_2H_2 is burned in excess oxygen. (15 points)

Name: _____

Test 1

8. Write complete atomic symbols for three isotopes of the element Uranium (U). (6 points)

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

NaClO_2 _____

CuSO_4 _____

LiNO_3 _____

HBr _____

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

ammonium carbonate _____

dinitrogen trioxide _____

iron (II) hydroxide _____

calcium fluoride _____

11. Calculate the molecular weight of the following compounds. (5 points each)

$\text{Na}_2\text{Cr}_2\text{O}_7$ _____

$\text{C}_5\text{H}_9\text{NH}_2$ _____

12. How many grams do 5.12×10^{18} sodium atoms weigh? (6 points)

Name: _____

Test 1

13. A sample of ascorbic acid is synthesized in the lab. It contains 3.00 g of carbon and 4.00 g of oxygen. Another sample of ascorbic acid isolated from citrus fruits contains 6.35 g of oxygen. How many grams of carbon does it contain? (12 points)

14. Determine the number of neutrons and protons in a given atom for each of the following elements. (6 points)

Element	Protons	Neutrons
^{187}Re	_____	_____
^{73}Ge	_____	_____
^3H	_____	_____

15. Balance the following equation and calculate the amount of FeO which could be produced by reacting 5.00 g of Fe_3O_4 and 5.00 g of CO. (15 points)

