

Name: _____
130 points
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Test 1
Chemistry 121A
October 1, 1998

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.

- What is the length of a 2300 cm long block of wood in km? (4 points)
A) 2.3×10^{-6} km B) 2.3×10^0 km C) 2.3×10^{-2} km D) 2.3×10^1 km E) 2.3×10^{-1} km
- Do the following arithmetic with correct significant figures: (4 points)
 $(9.212 + 12.44 - 0.9912) / 33.151$
A) 0.62323 B) 0.6232 C) 0.623 D) 0.62 E) 0.6
- How many neutrons and protons does a ^{11}C nucleus have? (4 points)
A) 11 p, 11 n B) 6 n, 6 p C) 6 p, 5 n D) 5 p, 6 n E) 11 p, 0 n
- What is the name of the CrO_4^{2-} anion? (4 points)
A) chromate B) chromite C) perchromate D) chlorite E) chromide
- How many moles are 36.00 g of ^{12}C ? (4 points)
A) 1.0 B) 2.0 C) 3.0 D) 36.0 E) 72.0
- A compound has 30.45 % by mass nitrogen and 69.55 % oxygen. What is the empirical formula of this compound? (4 points)
A) NO B) NO_2 C) N_2O_3 D) N_3O_4 E) N_2O_5
- Write the balanced chemical equation for the reaction of PBr_5 with H_2O to produce H_3PO_4 and HBr . Calculate the mass of HBr produced when 4.305 g of PBr_5 is reacted in excess water. (15 points)

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8. Define isotope and give an example. (6 points)

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

Ca(OH)_2 _____

PCl_5 _____

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

$\text{Cu}_3(\text{PO}_4)_2$ _____

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

chromium (II) bisulfate _____

magnesium hydroxide _____

sulfur trioxide _____

iron (III) sulfite _____

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

Testosterone, $\text{C}_{19}\text{H}_{28}\text{O}_2$ _____

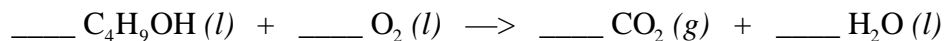
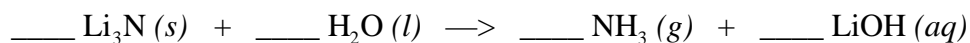
12. How many atoms are in 5.12g of nitrogen? (8 points)

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13. A piece of aluminum foil measuring 12.0 m by 15.5 m has a mass of 51.75 g. Aluminum has a density of 2.70 g/cm³. What thickness is the aluminum foil in millimeters? (15 points)

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



15. Balance the following equation and calculate the amount of FeO which could be produced by reacting 5.00 g of Fe₂O₃ and 15.00 g of CO. (15 points)

