Exam 1 – CHEM 1410, Sept. 28, 2005

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Name_____

MULTIPLE CHOICE (Circle the ONE correct answer)

1. 50. micrograms (μg) is equivalent to how many nanograms (ng)?

[A] $5x10^{-5}$ ng [B] 0.05 ng [C] 500 ng [D] $5x10^{4}$ ng

2. How many liters are in 333 mL?

[A] 3.33×10^{5} [B] 0.333 [C] 33.3 [D] 3.33

3. $1x10^{6}$ m^2 = ____ mi^2

[A] 0.39 [B] 2.6 [C] 620 [D] $2.6x10^{12}$

4. 800. cubic centimeters (cm^3) is equivalent to how many cubic inches (in^3) ?

(A) 49 in^3 (B) 124 in^3 (C) 315 in^3 (D) $1.31x10^{4}$ in^3

5. The density of mercury (Hg) is 13.6 g/cm^3. What is the volume, in Liters, of 500 lb of mercury?

(A) $1.67x10^{4}$ L (B) 0.060 L (C) 16.7 L (D) 12.3 L

6. What is the density (g/mL) of an object that has a mass of 14.01 grams and, when placed into a graduated cylinder, causes the water level to rise from 25.2 mL to 33.6 mL?

[A] 0.60 [B] 1.7 [C] 1.8 [D] 2.4

7. A $^{128}Te^{2-}$ ion has how many electrons (e) and neutrons (n)?

[A] 54 e & 76 n B] 52 e & 76 n [C] 50 e & 76 n [D] 54 e & 74 n

8. An ion containing 56 protons, 81 neutrons and 54 electrons has the atomic symbol:

[A] $^{137}Ba^{2-}$ [B] $^{135}Xe^{2+}$ [C] $^{137}Ba^{2+}$ [D] $^{137}Tl^{2+}$

9. A Lead-206 nucleus contains:

[A] 82 p & 124 n [B] 82 p & 206 n [C] 124 p & 82 n [D] 57 p & 149 n

10 Predict the product when Radium (Ra) combines with Selenium (Se).

[A] $RaSe$ [B] Ra_2Se [C] $RaSe_2$ [D] Ra_2Se_3

11 The formula of the ionic compound, magnesium phosphate, is

[A] Mg_3P_2 [B] $Mg_2(PO_4)_3$ [C] $Mg_3(PO_4)_2$ [D] $MgPO_4$

12. What is the name of the ionic compound, $Ca(NO_2)_2$?

[A] calcium nitrate [B] calcium nitrite [C] calcium dinitrite [D] calcium dinitride

13. What is the name of the binary compound Al_2O_3 ?

[A] aluminum oxide [B] dialuminum trioxide [C] aluminum (III) trioxide [D] bisaluminum trioxide

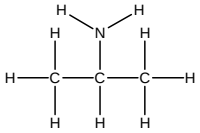
14. A molecule has the condensed structural formula, $NH_2CH_3CH_3NH_2$. The empirical formula of this compound is

[A] $C_4H_{20}N_4$ [B] $C_2H_8N_2$ [C] $C_2H_{10}N_2$ [D] CH_5N

15. Which of the following compounds is molecular?

[A] Fe_2O_3 [B] NaOH [C] NF_3 [D] $CuCl_2$

16. The condensed structural formula of the molecule with the structural formula to the right is:



[A] C_3H_9N [B] $CH_3CHNH_2CH_3$ [C] $CH_3CH(NH_2)CH_3$ [D] $CH_3(NH_2)CHCH_3$

17. Which of the following is a nonmetal?

[A] Ca [B]Br [C] Fe [D] Sb

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18. A compound has the empirical formula, CH_2O. The experimental Molar Mass is 116 ± 8 g/mol. Therefore, the molecular formula is

[A] $C_2H_4O_2$ [B] $C_3H_6O_3$ [C] $C_4H_8O_4$ [D] None of the above

19. What is the mass percent composition of N in $Ca(NO_3)_2$?

[A] 8.5% [B] 59% [C] 24% [D] 17%

20. The total number of carbon atoms in 25 grams of acetone, C_3H_6O, is:

[A] $7.8x10^{23}$ [B] $2.6x10^{23}$ [C] $8.3x10^{22}$ [D] $4.5x10^{25}$

21. Calculate the number of moles of water present in a 10.0 kg sample.

[A] 55.5 [B] 555 [C] 1.80×10^3 [D] 1.80×10^5

22. Calculate the number of molecules in 2.86 g CO_2.

[A] 6.48×10^{15} [B] 1.30×10^{22} [C] 3.91×10^{22} [D] 1.17×10^{23}

Avogadro's Number is $N_A = 6.02 \times 10^{23}$