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 x 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:
10. Predict the product when Radium (Ra) combines with Selenium (Se).
   [A] RaSe     [B] Ra₂Se     [C] RaSe₂     [D] Ra₂Se₃

11. The formula of the ionic compound, magnesium phosphate, is
   [A] Mg₃P₂     [B] Mg₂(PO₄)₃     [C] Mg₃(PO₄)₂     [D] MgPO₄

12. What is the name of the ionic compound, Ca(NO₂)₂ ?

13. What is the name of the binary compound Al₂O₃ ?

14. A molecule has the condensed structural formula, NH₂CH₃CH₃NH₂ . The empirical formula of this compound is

15. Which of the following compounds is molecular?

16. The condensed structural formula of the molecule with the structural formula to the right is:
   [A] C₃H₉N     [B] CH₃CHNH₂CH₃     [C] CH₃CH(NH₂)CH₃     [D] CH₃(NH₂)CHCH₃

17. Which of the following is a nonmetal?

18. A compound has the empirical formula, CH₂O. The experimental Molar Mass is 116 ± 8 g/mol. Therefore, the molecular formula is
   [A] C₂H₄O₂     [B] C₃H₆O₃     [C] C₄H₈O₄     [D] None of the above

19. What is the mass percent composition of N in Ca(NO₃)₂ ?
   [A] 8.5%     [B] 59%     [C] 24%     [D] 17%

20. The total number of carbon atoms in 25 grams of acetone, C₃H₆O, is:
   [A] 7.8x10²³     [B] 2.6x10²³     [C] 8.3x10²²     [D] 4.5x10²⁵
21. Calculate the number of moles of water present in a 10.0 kg sample.

[A] 55.5  [B] 555  [C] $1.80 \times 10^3$  [D] $1.80 \times 10^5$

22. Calculate the number of molecules in 2.86 g CO₂.

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

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