CHM 1025 Exam 1 Broward Tutoring Review – Spring 2020

1. Using PC for physical change and CC for chemical change, identify the following: Limestone crushed, coal burns, steam condenses, air expanding.
   A) PC, PC, PC, CC
   B) PC, CC, CC, PC
   C) CC, PC, PC, CC
   D) PC, CC, PC, PC
   E) CC, PC, CC, CC

2. Indicate how many significant figures are in the following values:
   0.00967 45.908 900.0 9.6700 2700
   A) 5, 4, 3, 3, 4
   B) 3, 5, 4, 5, 2
   C) 6, 5, 1, 3, 2
   D) 3, 4, 4, 5, 4
   E) 5, 5, 3, 5, 2

3. Diamonds are measured in carats and one carat equals 0.200 grams. The density of diamond is 3.51 g/cm^3. What is the volume in cm^3 of a 5.0 carat diamond?
   A) 3.51 cm^3
   B) 3.5 cm^3
   C) 1.42 cm^3
   D) 0.284 cm^3
   E) 0.28 cm^3

4. Name the following compounds: $CrBr_3$, $FeSO_4$, NO_2.
   A) Chromium (II) bromide, iron sulfite, mononitrogen dioxide
   B) Chromium (I) bromide, iron (II) sulfite, nitrogen (II) oxide
   C) Chromium tribromide, iron sulfate, nitrogen oxide
   D) Chromium bromide, iron (II) sulfide, nitrogen (II) dioxide
   E) Chromium (III) bromide, iron (II) sulfate, nitrogen dioxide

5. What is the classification of $CaCO_3$?
   A) Atomic Element
   B) Molecular Element
   C) Molecular Compound
   D) Ionic Compound
   E) Atomic Compound

6. The coldest temperature ever measured in the United States is -80.0 ^{o}F on January 23, 1971, in Prospect Creek, Alaska. What was the temperature in Kelvin?
   A) 211 K
   B) 299.8 K
   C) 371 K
   D) 335 K
   E) 273 K

7. Determine which of the following samples is the heaviest:
   1.1×10^{23} gold atoms 2.82×10^{22} helium atoms 1.8×10^{23} lead atoms 7.9×10^{21} uranium atoms

   A) Gold sample
   B) Helium sample
   C) Lead sample
   D) Uranium samples
   E) All the samples weigh the same

8. Bromine has 10 known isotopes, but only two occur naturally, ^{79}Br and ^{81}Br; the relative atomic of masses of the two isotopes are 78.918337 amu and 80.9162906 amu, respectively. Calculate the percent abundance of each isotope.

   A) ^{79}Br 49.3%, ^{81}Br 50.7%
   B) ^{79}Br 63.3%, ^{81}Br 36.7%
   C) ^{79}Br 99.5%, ^{81}Br 0.5%
   D) ^{79}Br 36.7%, ^{81}Br 63.3%
   E) ^{79}Br 50.7%, ^{81}Br 49.3%

9. A sample of a hydrocarbon produced 3.14 grams of CO_2 and 1.28 grams of H_2O during combustion analysis. If the hydrocarbon has a molar mass between 50 and 60 g/mol, what is its molecular formula?
   A) C_3H_6
   B) C_3H_8
   C) C_4H_4
   D) C_4H_{10}
   E) C_4H_8

10. A 1.00 M solution of dye is diluted by taking 10.00 ml of it and adding enough water to make 100.0 ml solution. Then, 10.00 ml of that solution is diluted to a volume of 250.0 ml. What is the concentration of the diluted dye?
   A) 0.0020 M
   B) 0.0025 M
   C) 0.0040 M
   D) 0.0250 M
   E) 0.0400 M

11. In an experiment, 20.0 g of iron (II) chloride reacts with 30.0 g of sodium phosphate. If 8.21 g of sodium chloride was produced in the experiment, what was the percent yield of the reaction?
    A) 75.9 %
    B) 77.2 %
    C) 44.5%
    D) 20.3 %
    E) 23.5 %

12. What is the answer to the following calculations with proper significant figures?
5.211 g - 6.10 g + 0.991 g = ? (0.0700 g x 1050 g) / 400.10 g = ?

    A) 0.102 g; 0.184 g
    B) 0.10 g; 0.184 g
    C) 0.102 g; 0.18 g
    D) 0.10 g; 0.1837 g
    E) 0.102 g; 0.1837 g

13. The ^{81}Br isotope has which atomic number, neutron number, and mass number, respectively?
    A) 35,46, 81
    B) 35, 81, 46
    C) 81, 46, 35
    D) 46, 81, 35
    E) 35, 81, 116

14. An unknown substance has a density of 0.983 g/cm^3. What is this density in ng/(μm)^3?
    A) 98.3
    B) 0.983
    C) 9.83×10^{-2}
    D) 9.83×10^{-4}
    E) 9.83×10^{-6}

15. A certain element X has electron configuration [A]ns^{2}np^5 and element M has electron configuration [B]ns^2. If an ionic compound were to form between X and M, what would the formula most likely look like?
    A) MX
    B) M_2X
    C) MX_2
    D) M_2X_3
    E) M_3X_4