Please read all the questions VERY carefully before answering. On scantron start from the same bubble number as the question number for your multtiple choice question. Write neatly. If I cannot read your answer, you will not receive any point. Use the attached periodic table and constant chart. No outside paper is allowed. Total points = 38 + (24x3=)72 = 110

SHORT ANSWER. In all calculations, write the set up equation first, then put the raw data with units. Then do your calculations. Points will be deducted if your answer is not clearly written.

1) Show calculations with units and sig. fig.to convert 16.32 gallon (gal) into milliliter (mL)   1) _____
   (given 1 gal = 3.785 L and 1 L = 1000 mL). (6 pts.)

2) Calculate (with units and sig. fig.) how many m^2 are in 2659 cm^2 (given 1 m = 100 cm.)? (6   2) _____
   pts.)

3) Calculate the volume of 12.8 g of a liquid that has a density of 0.789 g/mL. with correct   3) _____
   numbers of significant figures (6 pts.)

4) With a dosage requirement of 40.0 µg/kg of body waight, show your calculation of how many milligrams of the medicine needs to be administered to a 80.0 lb patient? (Given 1 kg = 2.205 lb; 1 mg = 1000 µg) (6 pts.)

4) _____

5) Suppose it took 108 joules of energy to raise a bar of gold from 25.0°C to 29.7°C. Given that the specific heat capacity of gold is 0.128 J/g·°C, what is the mass (in grams) of the bar of gold? Show all your calculations with set up equation and units and sig. fig.. Given q = m.C. ΔT. (8 pts.)

5) _____

6) Density of a metal A is 1.7 g/ cc and that of metal B is 7.9 g/cc. If a ball made from metal B has a mass of 409.5 grams, then what would be the mass of a ball, made from metal A. The balls have the same volume. (6 pts.)

6) _____

MULTIPLE CHOICE. On scantron start from the same bubble number as the multiple choice question number. Choose the one alternative that best completes the statement or answers the question (3 pts. each).

7) The correct scientific notation for the number 0.00050210 is: 7) _____
   A) 5.0210×10^4
   B) 5.021×10^{-4}
   C) 5.0210×10^{-4}
   D) 5.021×10^4
   E) none of the above

8) The correct number of significant figures in the number "9.080×10^4" is   8) _____
   A) ambiguous
   B) 4
   C) 3
   D) 5
   E) none of the above

9) Determine the answer to the following equation with correct number of significant figures: 9) _____
   $(17.103 + 2.03) \times 1.02521 =$ _____
   A) 20
   B) 19.62
   C) 19.6153
   D) 19.6
   E) none of the above

10) The correct prefix for the multiplier 1,000,000 is: 10) _____
   A) mega.
   B) micro.
   C) milli.
   D) nano.
   E) none of the above

11) What is the standard SI unit for mass?   11) _____
   A) kilogram
   B) ton
   C) gram
   D) pound
   E) none of the above

12) How many cm^3 are there in 1.25 ft^3?   12) _____
   A) 38.1
   B) 3.54×10^4
   C) 5.49×10^3
   D) 246
   E) none of the above

13) Given the density of Au is 19.3 g/cm³, determine the mass of gold in an ingot with the dimensions of 10.0 in × 4.00 in × 3.00 in.　　13) _____

   A) 2.32×10^3
   B) 0.161
   C) 3.80×10^4
   D) 102
   E) none of the above

14) The distance from New York City to Washington, DC is approximately 235 miles. Identify the correct solution map to convert from miles to kilometers using the prefix multipliers and the given conversion factors: 1 mile = 5280 ft; 1 ft = 12 in; 1 in = 2.54 cm.　　14) _____

   A) $235\ \text{mile} \times \dfrac{1\,2\ \text{in}}{1\ \text{ft}} \times \dfrac{2.54\ \text{cm}}{1\ \text{in}} \times \dfrac{1\ \text{m}}{10^{-2}\ \text{cm}} \times \dfrac{10^3\ \text{km}}{1\ \text{m}}$

   B) $235\ \text{mile} \times \dfrac{1\ \text{ft}}{5280\ \text{mile}} \times \dfrac{12\ \text{in}}{1\ \text{ft}} \times \dfrac{1\ \text{in}}{2.54\ \text{cm}} \times \dfrac{10^{-2}\ \text{cm}}{1\ \text{m}} \times \dfrac{1\ \text{km}}{10^3\ \text{m}}$

   C) $235\ \text{mile} \times \dfrac{5280\ \text{ft}}{1\ \text{mile}} \times \dfrac{12\ \text{in}}{1\ \text{ft}} \times \dfrac{2.54\ \text{cm}}{1\ \text{in}} \times \dfrac{10^{-2}\ \text{m}}{1\ \text{cm}} \times \dfrac{1\ \text{km}}{10^3\ \text{m}}$

   D) $235\ \text{mile} \times \dfrac{12\ \text{in}}{1\ \text{ft}} \times \dfrac{1\ \text{in}}{2.54\ \text{cm}} \times \dfrac{10^{-2}\ \text{cm}}{1\ \text{m}} \times \dfrac{1\ \text{km}}{10^3\ \text{m}}$

   E) $235\ \text{mile} \times \dfrac{5280\ \text{ft}}{1\ \text{mile}} \times \dfrac{1\ \text{ft}}{12\ \text{in}} \times \dfrac{2.54\ \text{in}}{1\ \text{ft}} \times \dfrac{1\ \text{m}}{10^{-2}\ \text{cm}} \times \dfrac{10^3\ \text{km}}{1\ \text{m}}$

15) Which state of matter has indefinite shape and is compressible?　　15) _____

   A) plasma
   B) liquid
   C) solid
   D) gas
   E) none of the above

16) How would you classify salt water?　　16) _____

   A) pure substance-element
   B) mixture-heterogeneous
   C) mixture-homogeneous
   D) pure substance-compound
   E) none of the above

17) Which of the following items is a chemical property?　　17) _____

   A) the paint color on a new red Corvette
   B) the tarnishing of a copper statue
   C) the odor of spearmint gum
   D) the melting and boiling point of water
   E) none of the above

18) If a particular process is endothermic, the reverse process must be a (an)   18) _____
    A) chemical change.
    B) isothermal process.
    C) endothermic process.
    D) exothermic process.
    E) none of the above

19) What is the value of 98 °F in units of °C?   19) _____
    A) 37
    B) 371
    C) 22
    D) 72
    E) none of the above

20) An atom containing 7 protons, 8 neutrons, and 7 electrons   20) _____
    A) is an ion.
    B) cannot exist.
    C) is charge-neutral.
    D) is an oxygen atom.
    E) none of the above

21) Which of the following elements has only 12 protons?   21) _____
    A) O
    B) C
    C) Zn
    D) Mg
    E) none of the above

22) The names of the elements whose symbols are Si, P, Mn, and S are respectively,   22) _____
    A) silicon, phosphorus, magnesium, and sulfur.
    B) silicon, potassium, magnesium, and sulfur.
    C) silicon, potassium, magnesium, and sodium.
    D) silver, phosphorus, magnesium, and sulfur.
    E) silicon, phosphorus, manganese, and sulfur.

23) Metals are located where on the periodic table?   23) _____
    A) zig-zag diagonal line
    B) right side
    C) left side
    D) middle
    E) none of the above

24) How many protons and electrons are present in O^{2-}?   24) _____
    A) 8 protons and 10 electrons
    B) 10 protons and 8 electrons
    C) 8 protons and 8 electrons
    D) 16 protons and 8 electrons
    E) none of the above

25) What is the charge on the ion formed by selenium?   25) _____

    A) 2-
    B) 2+
    C) 1-
    D) 1+
    E) none of the above

TRUE/FALSE. In scantron fill the circle "A" for a True answer and "B" for False answer (3 pts. each).

26) The mass of an object, 4.55×10^{-3} g, expressed in decimal notation is 0.000455 g.   26) _____

27) The number 0.010100 has five significant figures.   27) _____

28) Protons and electrons each have a mass of 1 amu.   28) _____

29) A cation forms when an atom gains an electron.   29) _____

30) All elements have three or more naturally occurring isotopes.   30) _____