Directions: Select the correct answer choice for each of the questions below. You will need a calculator for certain questions.

1. Of the masses 86.30 g, 0.0863 kg and 8.630 x 10^5 mg, which (if any) is the largest?
   a) 86.30 d) they are the same
   b) 0.0863 kg e) two are the same,
   c) 8.630 x 10^5 mg one is smaller

2. What volume of a liquid having a density of 1.48 g/cm^3 is needed to supply 5.00 grams of the liquid?
   a) 0.296 cm^3 d) 3.38 cm^3
   b) 1.48 cm^3 e) 7.40 cm^3
   c) 2.26 cm^3

3. The number of significant figures in 0.06060 x 10^-5 is
   a) 2 d) 5
   b) 3 e) 6
   c) 4

4. The number, three hundred fifty thousand, written in scientific notation is best written as
   a) 350 d) 3.50 x 10^5
   b) 3.5 x 10^6 e) 3.50 x 10^-5
   c) 3.5 x 10^5

5. The mass of a sample weighed on an electronic balance that is sensitive to ±0.3 mg is 1.2300 g. The number of significant figures in this measurement is
   a) 1 d) 4
   b) 2 e) 5
   c) 3
6. What is the numerical value of: 1.5 cm – 7.222 x 10^{-1} cm?
   a) 0.7778 cm       d) 0.8 cm
   b) 0.778 cm        e) 7.072 x 10^{-1} cm
   c) 0.78 cm

7. Evaluate the following: –4 – (–3)
   a) –1       d) –7
   b) 1        e) 12
   c) 7

8. To convert a value in kilograms to centigrams one should
   a) multiply by 10^5     d) divide by 10^5
   b) multiply by 10^3     e) divide by 10^1
   c) multiply by 10^{-3}

9. How many cm^2 are in an area of 4.21 in^2?
   a) 10.7 cm^2       d) 1.66 cm^2
   b) 114 cm^2        e) 1.14 cm^2
   c) 27.2 cm^2

10. When the prefix milli (m) is used in the metric system, a fundamental unit of measurement is multiplied by a factor of
    a) 10^{-9}       d) 10^3
    b) 10^{-6}        e) 10^9
    c) 10^{-3}
11. Solve for x in the following equation: $3x - 5 = 7$
   a) $-2$  d) 4
   b) 3  e) 6
   c) $-4$

12. 12% of 65 is _______
   a) 78  d) 542
   b) 7.8  e) none of these
   c) 5.42

13. $\frac{3}{10} + \frac{5}{6} - \frac{1}{3} =$
   a) $\frac{7}{13}$  d) 1.25
   b) $\frac{7}{30}$  e) none of the above
   c) $\frac{4}{5}$

14. Evaluate the following: $4^3 + 3^2$
   a) 18  d) 108
   b) 73  e) 70
   c) 21

15. If $9^x = 27$, then $x =$
   a) $\frac{1}{2}$  d) $-\frac{1}{2}$
   b) $\frac{1}{3}$  e) none of these
   c) $\frac{3}{2}$

END OF DIAGNOSTIC TEST
**Answers: (Please use CAPITAL letters)**

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