THE UNIVERSITY OF ZAMBIA
SCHOOL OF NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY
2018 ACADEMIC YEAR
TERM 1
CHE1000: INTRODUCTION TO CHEMISTRY

TUTORIAL SHEET 1: **21st February 2019**

NOTE: **Answer all** the problems in a **hard cover** book and submit to the Tutor during tutorial time week beginning 25th February 2019. **Tutor will administer a random Quiz**

1. (a) Determine how many significant figures are in each of these numbers .
   (i) 2.03 (ii) 3000 (iii) 0.00872 (iv) $400. \times 10^5$

   (b) Put these numbers into scientific notation.

   (i) 0.000034 (ii) 8000000 (iii) 0.045×10^{-3}

   (c) Take these numbers out of scientific notation and then write as standard numbers.

   (i) 9.481×10^{-8} (ii) 2.08×10^{10} (iii) 6.7978×10^{0}

2. You measure water in two containers: a 10-mL graduated cylinder with marks at every mL, and a 1-mL pipet marked at every 0.1 mL. If you have some water in each of the containers and add them together, to what decimal place could you report the total volume of water?

3. What is the best answer to report for $\frac{3.478\ \text{g} \times 1.164\ \text{g}}{2.00\ \text{mL}} - 0.349\ \text{g/mL}$

4. In an experiment, you obtain the number 0.045006700 on a calculator. If this number actually has four (4) significant figures, how will you report it?

6. How many palladium atoms would it take to encircle the Earth at its equator? (The atomic diameter of palladium (Pd) is 140 pm; the equatorial circumference of the Earth is 40,075.02 km.)

7. For which pair is the SI prefix not matched correctly with its meaning?

   a) mega = 10^6
   b) kilo = 1000
   c) deci = 10
   d) nano = 10^{-9}
   e) centi = 0.01

8. Order the four metric prefixes from smallest to largest, nano, kilo, centi, milli.