Year 12 Chemistry

WORKSHEET 1

Day 1

1. In the laboratory, a student uses a top pan balance to find the mass of a small object. She tells you correctly that the digital readout shows 44.15 g. Write the measurement with its uncertainty.

2. Distinguish between:

    i. Accuracy and precision in measurements.

    ii. Systematic and random errors with suitable examples.

3. When a student was measuring a given amount of water from a measuring cylinder, she distorted the cylinder and many of the readings done were estimated by the experimenter. What are the random error and the systematic error in this case?

Day 2

4. Which of the following quantities can be determined exactly?

    A. The number of light switches in the room you are sitting in now.
    B. The number of meters in a kilometer.
    C. The number of stars in the sky.
    D. The number of milliliters in a liter.
    E. The number of red blood cells in exactly one litre of blood.

5. A sample of liquid has a measured volume of 24.15 mL. Assume that the measurement was recorded properly.

    i. How many significant figures does the measurement have?

ii. Assume the volume measurement was made with a graduated measuring cylinder. How far apart were the scale divisions on the measuring cylinder, in mL?
A. 10 mL
B. 1 mL
C. 0.1 mL
D. 0.01 mL

iii. Which of the digit(s) in the measurement is uncertain?
A. 2 B. 4 C. 1 D. 5

Day 3

6. The exponential base unit for the prefix mega is denoted by _____.
A. 10^{-9}
B. 10^{3}
C. 10^{6}
D. 10^{9}

7. A liquid has a mass of 0.25 kg and occupies a volume of 0.30 L, at room temperature. Calculate the density of the liquid at room temperature in g mL^{-I}.

8. Having knowledge of dimensional analysis helps an experimenter to
A. reduce error in measurement.
B. increase accuracy of the measured value.
C. increase precision of the measured value.
D. determine the correct units of a calculation problem.

Day 4

9. The correct prefix for the exponential base unit 10^{-6} is
A. kilo.
B. milli.
C. mega.
D. micro.

10. An experiment requires 200 milligrams of a chemical. Calculate the number of times this experiment can be conducted if 20 grams of this chemical is available in the laboratory.

Day 5

11. Which of the following is the correct exponential base unit for milli?

12. Convert the following:
    (i) 120 millilitres to litres

    (ii) 2.5 atmospheres to kilopascals (1 atmosphere = 101.3 kilopascals)