

## Significant Figures

- i. The total number of digits in measuring of any physical quantity with certainty is called significant figures. There are certain rules for determining the number of significant figures.
- ii. All digits are significant except zero in the beginning of a number. For example, in 285 cm, there are three significant figures.
- iii. Zeros to the left of the first non-zero digit are not significant if such zeros follow the decimal point. For example, 0.03 has one significant figure.
- iv. Zeros to the right of the decimal point are significant. For example, 0.200 g has three significant figures.
- v. Zeros between two non-zero digits are significant. Thus, 2.005 has four significant figures.
- vi. Counting the numbers of object, for example, 2 balls or 20 eggs, have infinite significant figures as these are exact numbers and can be represented by writing infinite number of zeroes after placing a decimal. i.e.,  $2 = 2.000000$  or  $20 = 20.000000$ .

Notes: In additions or subtractions, the final result should be reported to the same number of decimal places as that of the term with the least number of decimal places.

## Laws of Chemical Combination

All chemical reactions take place according to certain laws. These laws are known as laws of chemical combination.

- i. Law of conservation of mass: This law was put forth by Antoine Lavoisier in 1789. According to this, "It states that the total mass of reactants is equal to the total mass of the products".
- ii. Law of constant composition: This law was given by, a French chemist, Joseph Proust. This law states that a chemical compound is always found to be made of same elements combined together in fixed proportion by weight.  $\text{CO}_2$  can be prepared by number of methods but always 12g carbon react with 32g of oxygen.
- iii. Law of multiple proportions: This law was proposed by Dalton in 1803. According to this law, When two elements combine to form two or more chemical compounds, then weight of one of the element which combines with a fixed weight of the other, bears a simple whole number ratio to one another. This is called the law of multiple proportions.  
For example, The ratio of masses of oxygen in CO and  $\text{CO}_2$  for fixed mass of

(d) 3.0 g of carbon

Question 8. The prefix zepto stands for

(a)  $10^9$

(b)  $10^{-12}$

(c)  $10^{-15}$

(d)  $10^{-21}$

Question 9. Which has maximum number of atoms?

(a) 24 g of C (12)

(b) 56 g of Fe (56)

(c) 27 g of Al (27)

(d) 108 g of Ag (108)

Question 10: Irrespective of the source, pure sample, of water always yields 88.89% mass of oxygen and 11.11% mass of hydrogen. This is explained by the law of

(a) Conservation of Mass

(b) Multiple Proportions

(c) Constant Composition

(d) Constant Volume

Question 11. Hemoglobin contains 0.33% of iron by weight. The molecular weight of hemoglobin is approximately 67200. The number of iron atoms (At. wt. of Fe = 56) present in one molecule of hemoglobin is

(a) 6

(b) 1

(c) 4

(d) 2

Question 12. The -ve charged particles is called:

(a) Anion

(b) Cation

(c) Radical

(d) Atom

Question 13. Which of the following contains same number of carbon atoms as are in 6.0 g of carbon (C – 12)?

(a) 6.0 g Ethane

(b) 8.0 g Methane

(c) 21.0 g Propane

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- (b) Liquid
- (c) Gas
- (d) Plasma

(2) Particles are held very close to each other in ... in an orderly fashion and there is not much freedom of movement.

- (a) Liquid
- (b) Gas
- (c) Solid
- (d) Plasma

(3) Particles of .... consist of only one type of atom.

- (a) Compound
- (b) Mixture
- (c) Element
- (d) All the above

(4) Water molecule comprises ... hydrogen atoms and ... oxygen atom.

- (a) One , two
- (b) Three , one
- (c) One , three
- (d) Two , one

(5) Which of the following is not an example of Physical Properties of substance.? (a) Odour

- (b) Melting point
- (c) Density
- (d) Composition

2. The uncertainty in the experimental or the calculated values is indicated by mentioning the number of significant figures. Significant figures are meaningful digits which are known with certainty plus one which is estimated or uncertain. The uncertainty is indicated by writing the certain digits and the last uncertain digit. there are certain rules for determining the Number of significant figures. These are Stated below:

■ All non-zero digits are significant. For Example in 285 cm, there are three