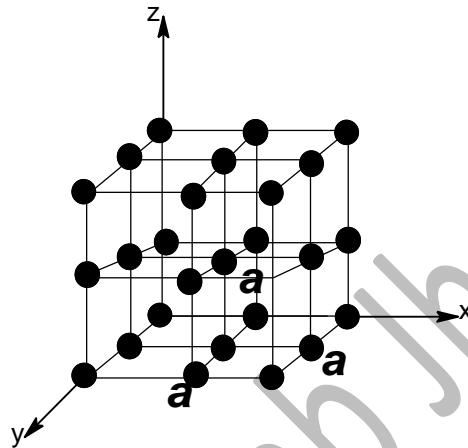


# 1. SOLID STATE

## Space Lattice/Unit Cell:

The relative position of constituent particles (atoms, molecules or ions) in a crystal in three dimensional spaces is called *space lattice*.

A general example of array of points in a three dimensional space may be shown as:



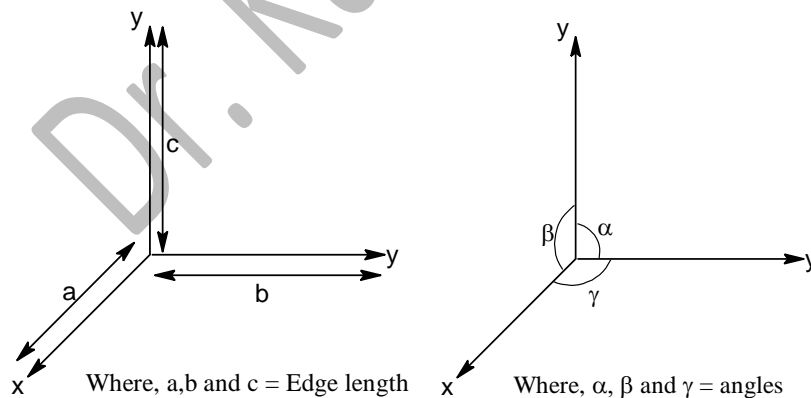
Each point indicates only position of center of each constituent particles but not their actual size. It is to be noted that the distance between any two points must be an integral multiple of the distance between two adjacent points.

The smallest geometrical portion of the crystal lattice which when repeated in all directions generates entire lattice is called *unit cell*.

A unit cell is characterized by:

- Its edge length and
- Angle between two edges.

Since there are three edges and three angles so, six parameters are used to explain a unit cell.

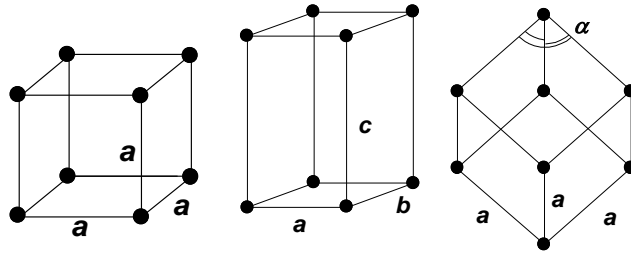


The unit cells are broadly classified into following two types:

- Simple or primitive unit cells and

b. Non-primitive or centered unit cell.

In the case of primitive unit cell, constituent particles are present only at each corner.



On the other hand, in the case on non-primitive type of unit cell constituent particles are also present at the site other than corners. It is further subdivided into three types.

All types of unit cells are in following profile:

