# Frequently Asked Questions

- 1. What is the technique used to identify the optimal solution? Answer: The technique used to identify the optimal solution is called the graphical solution technique for an linear programming problem with two variables.
- 2. Mention the two graphical approaches to find the optimal solution ? Answer: The two graphical solution techniques or approaches: extreme point enumeration approach, and iso-profit (cost) function approach to find the optimum solution to an linear programming problem.
- 3. What is a extreme point method? Answer: An extreme point method identify coordinates of each of the extreme (or corner) points of the feasible region by either drawing perpendiculars on the x-axis and the y-axis or by solving two intersecting equations
- 4. How is iso-profit(cost) method used ? Answer: Iso profit (cost) determine the slope (x1, x2) of the objective function and then join intercepts to reveal the profit (or cost) line.
- 5. What is the slope of the objective function?

Answer: the slope of the objective function is same as that of the constraint forming the boundary of the feasible solutions region.

6. When is a constraint said to be active?

Answer: The constraint is said to be active or binding or tight, if at optimally, the left hand side of a constraint is equal to the right hand side. In other words, an equal constraint is always active. An inequality constraint may or may not be active.

7. What do we mean by infeasible solution?

Answer: If it is not possible to find a feasible solution that satisfies all the constraints, then the linear programming problem is said to have an infeasible solution or alternatively, inconsistence. Infeasibility depends solely on the constraints and has nothing to do with the objective function.

#### 8. What does the term simplex mean?

Answer: The simplex is an important term in mathematics, one that represents an object in an n-dimensional space, connecting n+1 points. In one dimension, a simplex is a line segment connecting two points, in two dimensions, it is a triangle formed by joining three points; in three dimensions, it is a four sided pyramid, having four corners.

9. What does a simplex method examine?Answer: The simplex method examines the extreme points in a systematic manner repeating the same set of steps of the algorithm until an optimal solution is found.What is simplex method also called as ?

Answer: the simplex method is also called as iterative method

10. What is the advantage of the simplex method? Answer: Since the number of extreme points (corners or vertices) of the feasible solution space are finite, the method assures an improvement in the value of the objective function as we move from one iteration (extreme point) to another and achieve the optimal solution in a finite number of steps.

## 11. What is the use of simplex method?

Answer: The use of simplex method to solve an linear programming problem requires that the problem can be converted into its standard form.

#### 12. What is a slack variable?

Answer: A slack variable represents an unused resource, either in the form of time on a machine, labour hours, money, warehouse space or any number of such resources in various business problems, since these variables don't yield any profit, therefore such variables are added to the original objective function with zero coeffcients

13. What is a surplus variable?

Answer: A surplus variable represents the amount by which solution values exceed a resource. These variables are also called negative slack variables. Surplus variables, like slack variables carry a zero coefficient in the objective function.

### 14. What is a Big-M method?

Answer: The Big-M method is another method of removing artificial variables from the basis. In this method, we assign coefficients to artificial variables, undesirable from the objective function point of view.

### 15. What is an Artificial variable ?

Answer: Artificial variable are only a tool to get the simplex method started. These variables will eventually be equated to zero in the solution in order to attain feasibility in the original problem