## Graphical solution of two variable linearprogramming problem.

There are two techniques of solving an L.P.P. by graphical method. These are:

(1) Corner point method,

(2) Iso-profit or Iso-cost method.

## (1) Corner point method

## Working rule

- (i) Formulate mathematically the L.P.P.
- (ii) Draw graph for every constraint.
- (iii) Find the feasible solution region.
- (iv) Find the coordinates of the vertices of feasible solution region.
- (v) Calculate the value of objective function at these vertices.
- (vi) Optimal value (minimum or maximum) is the required solution.

Note: If there is no possibility to determine the point at which the suitable solution found, then the solution of problem is unbounded.

If feasible region is empty, then there is no solution for the problem.

Nearer to the origin, the objective function is minimum and that of further from the origin, the objective function is maximum.

## (2) Iso-profit or Iso-cost method: Various steps of the method are as follows:

(i) Find the feasible region of the L.P.P.

(ii) Assign a constant value  $Z_1$  to Z and draw the corresponding line of the objective function.

(iii) Assign another value  $Z_2$  to Z and draw the corresponding line of the objective function.

(iv) If  $Z_1 < Z_2$ ,  $(Z_1 > Z_2)$ , then in case of maximization (minimization) move the line P<sub>1</sub>Q<sub>1</sub>

corresponding to  $Z_1$  to the line  $P_2Q_2$  corresponding to  $Z_2$  parallel to itself as far as possible, until the farthest point within the feasible region is touched by this line. The coordinates of the point give maximum (minimum) value of the objective function.

Note: The problem with more equations/inequations can be handled easily by this method.

□ In case of unbounded region, it either finds an optimal solution or declares an unbounded solution. Unbounded solutions are not considered optimal solution. In real world problems, unlimited profit or loss is not possible.