**/\*Explanation to the problem\*/**

The total number of products in Large, Medium and Small size combination should be manufactured to maximize the profit.

Let

L1= Number of Large sized products manufactured in Plant 1

L2= Number of Large sized products manufactured in Plant 2

L3= Number of Large sized products manufactured in Plant 3

M1= Number of Medium sized products manufactured in Plant 1

M2= Number of Medium sized products manufactured in Plant 2

M3= Number of Medium sized products manufactured in Plant 3

S1= Number of Small sized products manufactured in Plant 1

S2= Number of Small sized products manufactured in Plant 2

S3= Number of Small sized products manufactured in Plant 3

Total number of variables= 9.

**Constraints:**

Selling constraints:

L1+L2+L3<=900

M1+ M2+M3<=1200

S1+S2+S3<=750

Storage constraints:

Plant 1: 20L1+ 15M1+ 12S1 <=13000

Plant 2: 20L2+ 15M2+ 12S2 <=12000

Plant 3: 20L3+ 15M3+ 12S3 <=5000

Production Constraints:

Plant1: L1+M1+S1<=750

Plant2: L2+M2+S2<=900

Plant3: L3+M3+S3<=450

Objective function: (Which must be maximized with the constraints above)

385(L1+L2+L3) +330(M1+M2+M3) +275(S1+S2+S3)

So, the total number of products cannot be more than 2100. (As per the production constraints).

Solving problem on R,

The maximum profit that can be earned with the constraints = $649000.00

The products made by each plant are:

L1=350

L2=0

L3=0

M1=400

M2=400

M3=133

S1=0

S2=500

S3=250

Total= 2033