Decision Variables:

Fj = Number of Full-Time Consultant to hire in shift i, i = 1,2,3

Pj = Number of Part-Time Consultant to hire in shift j, j = 1,2,3,4

Objective Function:

Minimize Cost: C = 14\*8(F1+F2+F3) + 12\*4(P1+P2+P3+P4)

ST.

Subject to:

F1+P1  ≥ 4

F15+P1  ≥ 4

F14+ F24+F25+P2  ≥ 8

F1+P1+F24+ F35+P3 ≥ 10

F2+ F34+P35+P4 ≥ 6

F1 ≥ P1

F2≥ P2

F3≥ P3

F4≥ P4

All Fj, Pj ≥ 0

2)

Y

0 x

3a) Decision Variables: L, M, S

Where L1 is the number of large products produce in plant1 per day

L2 is the number of large products produce in plant2 per day

L3 is the number of large products produce in plant3 per day

M1 is the number of medium products produce in plant1 per day

M2 is the number of medium products produce in plant2 per day

M3 is the number of medium products produce in plant3 per day

S1 is the number of small products produce in plant1 per day

S2 is the number of small products produce in plant2 per day

S3 is the number of small products produce in plant3 per day

b) Objective Function:

Maximize Profit: Z = 420L1 + 360M1 + 300S1 + 420L2 + 360M2 + 300S2 + 420L3 + 360M3 + 300S3

ST.

Sales Constraints:

L1 + L2 + L3 ≤ 900

M1 +M2 + M3 ≤ 1200

S1 + S2 + S3 ≤ 750

Square Footage:

20L1 +15 M1 +12S1 ≤ 13,000

20L2 +15M2 +12S2 ≤ 12,000

20L3 +15 M3 +12 S3 ≤ 5,000

Capacity:

L1 + M1 + S1 ≤ 750

L2 +M2 + S2 ≤ 900

L3 + S3 + S3 ≤ 450

L1≥ 0, M1≥ 0, S1 ≥ 0, L2≥ 0, M2≥ 0, S2 ≥ 0, L3≥ 0, M3≥ 0, S3 ≥ 0