Operations Reseach Test January 15, 2014

1.) Solve by using graphical method

Max $Z = 4x_1 + 3x_2$ Subject to

$4x_1 + 3x_2 \leq 24$

$x_1 \leq 4.5$

$x_2 \leq 6$

$x_1 \geq 0 \ , \ x_2 \geq 0$

2.) A company manufactures two types of products *X* and *Y* on facilities, *A*, *B*, *C*, *D*, *E*, and *F* having production capacities as under.

Facilities.	Production capacity to produce
A	100 of *X* OR 150 of *Y*
B	80 of *X* OR 80 of *Y*
C	100 of *X* OR 200 of *Y*
D	120 of *X* OR 90 of *Y*
E	60 of *X* only (Testing facility for product *X*)
F	60 of *Y* only.(Testing facility for product *Y*)

If the profit contribution of product *X* is .40F per unit and that of *Y* is 30F per unit, find the optimal product mix for maximising the profit

3. A company manufactures chairs and table as shown in the table below with wood and labour being the resources needed find the right product mix by simplex method for maximum profit.

Resource	**Table(X_1)**	**Chair(X_2)**	**Available**
Wood(m)	30	20	300
Labour(hr)	5	10	110
Unit profit	6 F	8F	