



UNIVERSITY OF ENGINEERING AND TECHNOLOGY TAXILA
Department of Industrial Engineering
Assignment # 2

Course Name: Operations Research
Semester: 5th(Entry 2011 Fall)

Course Code: IE-313

Assignment # 2

Q #: 1 Punjab Flour Mill has four branches A, B, C & D and four warehouses 1, 2, 3, and 4. Production, demand and transportation costs are given below:

Production (Tones)	Demand (Tones)
A-35	1-70
B-50	2-30
C-80	3-75
D-65	4-55

Transportation Costs (in Rs):

From	To	Cost
A	1	10
A	2	7
A	3	6
A	4	4
B	1	8
B	2	8
B	3	5
B	4	7
C	1	4
C	2	3
C	3	6
C	4	9
D	1	7
D	2	5
D	3	4
D	4	3

Use North-West Corner, Least Cost & Vogel's Approximation Methods to find the initial feasible solution.

Q #2: Suppose that England, France, and Spain produce all the wheat, barley, and oats in the world. The world demand for wheat requires 125 million acres of land devoted to wheat production. Similarly, 60 million acres of land are required for barley and 75 million acres of land for oats. The total amount of land available for these purposes in England, France, and Spain is 70 million acres, 110 million acres, and 80 million acres, respectively. The number of hours of labor needed in England, France and Spain to produce an acre of wheat is 18, 13, and 16, respectively. The number of hours of labor needed in England, France, and Spain to produce an acre of barley is 15, 12, and 12, respectively. The number of hours of labor needed in England, France, and Spain to produce an acre of oats is 12, 10, and 16, respectively. The labor cost per hour in producing wheat is \$9.00, \$7.20, and \$9.90 in England, France, and Spain, respectively. The labor cost per hour in producing barley is \$8.10, \$9.00, and \$8.40 in England, France, and Spain respectively. The labor cost per hour in producing oats is \$6.90, \$7.50, and \$6.30 in England, France, and Spain, respectively. The problem is to allocate land use in each country so as to meet the world food requirement and minimize the total labor cost.

		Unit Cost (\$ million)			Supply
		Wheat	Barley	Oats	
Source	England	162	121.5	82.8	70
	France	93.6	108	75	110
	Spain	158.4	100.8	100.8	80
Demand		125	60	75	