Neel Kandy

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- October 2017
B.Tech (All Branches) VIIth Semester

COURSE CODE: 10B1WMA731   MAX.MARKS: 25

COURSE NAME: Optimization Techniques

COURSE CREDITS: 3   MAX. TIME: 1.5 Hrs

Note: All questions are compulsory. Carrying of mobile phone and calculator during examinations will be treated as case of unfair means. Marks are indicated in square brackets.

Q1.Solve the LPP using Big M method $\quad Max\ Z = 5x_1 - 2x_2 + 3x_3$

s/t $2x_1 + 2x_2 - x_3 \geq 2$, $3x_1 - 4x_2 \leq 3$, $x_2 + 3x_3 \leq 5\ and\ x_1, x_2, x_3 \geq 0$ [5]

Q2.Solve the LPP using dual simplex method $Min\ Z = 3x_1 + 2x_2 + x_3 + 4x_4$

s/t $2x_1 + 4x_2 + 5x_3 + x_4 \geq 10$, $3x_1 - x_2 + 7x_3 - 2x_4 \geq 2$, $5x_1 + 2x_2 + x_3 + 6x_4 \geq 15$

$x_1, x_2, x_3, x_4 \geq 0$ [5]

Q3.(a) Write mathematical form of assignment problem.   [2+3=5]

(b) Solve the assignment problem in order to maximize the profit. The profit matrix is as follows

Salesman/City	A	B	C	D	E
1	32	38	40	28	40
2	40	24	28	21	36
3	41	27	33	30	37
4	22	38	41	36	36
5	29	35	40	35	39

Q4.Find basic feasible solution of the transportation problem using North West corner rule and least cost method. [5]

Source/Destination	D1	D2	D3	D4	Available
O1	5	3	6	2	19
O2	4	7	9	1	37
O3	3	4	7	5	34
Requirement	16	18	31	25	

Q5. Solve the above given transportation problem by finding basic feasible solution using Vogel's approximation method. [5]

3