

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION, December 2018

B.Tech VIIth Semester(All Branches)

Course Code: 10B1WMA731
Course Name: Optimization Techniques
Course Credits: 03

MAX. MARKS: 35

MAX. TIME: 2 Hrs

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

Q1. Solve the L.P.P using Big M method (CO1)[5]

$$\text{Min } Z = 4x_1 + x_2$$

$$\text{s/t } 3x_1 + x_2 = 3, 4x_1 + 3x_2 \geq 6, x_1 + 2x_2 \leq 4$$

$$x_1, x_2 \geq 0$$

Q2. Solve the assignment problem (CO3)[5]

Person/Job	J1	J2	J3	J4	J5
B1	4	6	7	5	11
B2	7	3	6	9	5
B3	8	5	4	6	9
B4	9	12	7	11	10
B5	7	5	9	8	11

Q3. Solve the transportation problem (CO4)[5]

Origin/Destination	D1	D2	D3	D4	D5	Available
O1	12	4	9	5	9	40
O2	8	1	6	6	7	20
O3	1	12	4	7	7	60
O4	10	15	6	9	1	60
Required	40	20	50	30	40	

Q4. Solve the I.P.P using branch and bound method (CO5)[7]

$$\text{Max } Z = 5x_1 + 4x_2$$

$$\text{s/t } x_1 + x_2 \leq 5, 10x_1 + 6x_2 \leq 45$$

$$x_1, x_2 \geq 0 \text{ and Integers}$$

Q5. Solve the nonlinear programming problem

(CO6)[6]

$$\text{Min } Z = 4x_1^2 + 2x_2^2 + x_3^2 - 4x_1x_2$$

$$\text{s/t } x_1 + x_2 + x_3 = 15, \quad 2x_1 - x_2 + 2x_3 = 20$$

$$x_1, x_2, x_3 \geq 0$$

Q6. Solve the nonlinear programming problem

(CO7)[7]

$$\text{Max } Z = -x_1^2 - x_2^2 - x_3^2 + 4x_1 + 6x_2$$

$$\text{s/t } x_1 + x_2 \leq 2, \quad 2x_1 + 3x_2 \leq 12$$

$$x_1, x_2 \geq 0$$

JUT TEST-3 EXAMINATION-DEC 2018