

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- APRIL-2018

B.Tech VIIIth Semester (All Branches)

COURSE CODE: 11B1WMA832

MAX. MARKS: 25

COURSE NAME: Linear Programming and Applications

COURSE CREDITS: 03

MAX. TIME: 1.5 Hrs

Note: All questions are compulsory. Each question is of 5 marks. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1. Solve the LPP using two phase method $Max Z = 3x_1 + 2x_2 + x_3 + 4x_4$

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

$$x_1, x_2, x_3, x_4 \geq 0$$

[CO2]

Q2. A company makes three products X, Y, Z out of three raw materials A, B and C. The number of units of raw materials required to produce one unit of product is as given in the following table:

	X	Y	Z
A	1	2	1
B	2	1	4
C	2	5	1

The unit profit contribution of products X, Y and Z are Rs.40,25 and 50 respectively. The number of units of raw materials available are 36,60 and 45 respectively. Determine the product mix that will maximize the total profit. Write the dual of the problem and find its solution using principal of duality.

[CO3]

Q3. Write mathematical form of assignment problem.

[CO4]

Q4. Solve the assignment problem in order to maximize the profit.

[CO4]

Job/Machine	A	B	C	D
1	3	6	2	6
2	7	1	4	4
3	3	8	5	8
4	6	4	3	7
5	5	2	4	3
6	5	7	6	4

Q5. Find basic feasible solution of the transportation problem using least cost entry method and Vogel's approximation method.

[CO5]

Origin/Destination	1	2	3	4	5	Supply
A	2	11	10	3	7	4
B	1	4	7	2	1	8
C	3	9	4	8	12	9
Requirement	3	3	4	5	6	