

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-III Semester (CS/IT)

COURSE CODE (CREDITS): 19B1WCI737

MAX. MARKS: 25

COURSE NAME: Optimization methods in Business analytics

COURSE INSTRUCTORS: Dr. Rakesh Kanji

MAX. TIME: 1 Hour and 30 Minutes

Note: Answer any 5. Marks are indicated against each question in square brackets.

Q1. $\text{Max } 3X_1 + 4X_2 + 4X_3$ [CO2]

Such that, $2X_1 + 3X_2 + 5X_3 \leq 8$

$5X_1 + 2X_2 + X_3 \leq 12$

$X_1 + 2X_2 + X_3 = 12$

Please convert it into dual

[5]

Q2. $Z_p = \text{Max } 6X_1 + 5X_2$

Such that, $X_1 + X_2 \leq 5$

$3X_1 + 2X_2 \leq 12$

[CO2]

If given Z_p and Z_d represents primal objective value and dual objective value then show

$Z_p \leq Z_d$.

[5]

Q3. Consider Q2 for identifying which resource is more profitable

[CO4]

[5]

Q4. For Q2, which sensitivity analysis is required either changing basic or non basic in objective function.

Justify it.

[CO4] [5]

Q5. Apply North west corner or or Minimum cost or VAM for given data as below. Why these are used?

[CO2] [4+2]

a_i (Supply points)					
250	3	1	7	4	
350	2	6	5	9	
400	8	3	3	2	
	200	300	350	150	b_j (demand points)

Q6. Apply MODI method for above table.

[CO4] [5]

Q7. (i) Can we solve transportation problem with simplex method?

[CO1] [2.5]

(ii) Will you iterate from beginning or last iteration onwards if by changing cost of basic or non basic shows $C_j - Z_j > 0$?(Here iteration refers from simplex table)

[CO1] [2.5]

12 Examinations October 2022