Roll No. | | | | | | | | | | | |

Total No. of Questions: 07 **Total No. of Pages: 02**

B. Com. (Sem. 3)
OPERATION RESEARCH
Subject Code: BCOP-304
Paper ID: B1127

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:

1. **All questions in SECTION A are COMPULSORY. Each question carries TWO marks.**
2. **Answer any FOUR questions from SECTION B. Each question carries TEN marks.**

SECTION A

1. a) What will be the dual of:

Min $Z = x_1 + x_2$

Subject to $2x_1 + x_2 \geq 4$

$x_1 + x_2 \geq 7$

$x_1 + x_2 \geq 0$

b) Discuss briefly the application of Assignment Problem.

c) What are the different methods of finding Initial basic feasible solution in transportation?

d) Write down the steps of Modified distribution method (MODI) in transportation.

e) What is meant by pure strategies?

f) What is the principle of dominance?

g) What is odds method?

h) What is meant by total elapsed time in sequence problems?

i) What is meant by float?

j) What is the difference between inventory model with single discount and multiple discount breaks.

SECTION B

2. Solve the following L.P.P

Maximise $Z = x_1 + 2x_2 + 3x_3$

Subject to $x_1 - x_2 + x_3 \geq 4$

$x_1 + x_2 + 2x_3 \leq$

8

$x_1 + x_3 \geq 2$

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

3. Solve graphically the following linear programming problem

Minimise $Z = 3x_1 + 5x_2$

Subject to $-3x_1 + 4x_2 \leq 12$

$2x_1 + 3x_2 \leq 12$

$2x_1 - x_2 \geq -2$

$x_1 \leq 4$

Whereas $x_1, x_2 \geq 0$

4. Using stepping stone method, solve the following transportation cost(in Rupee) for minimum cost of transportation.

Factory	Depot				Capacity
	D	E	F	G	
A	4	6	8	6	70
B	3	5	2	5	400
C	3	9	6	5	600
Required	400	450	350	500	3

5. A production manager wants to assign one of the five new methods to each of the four operations. The following table summarise the weekly output in units:

Operator	Weekly Output				
	M_1	M_2	M_3	M_4	M_5
A	4	6	11	16	9
B	5	8	16	19	9
C	9	13	21	21	13
D	6	6	9	11	7

Cost per unit is Rs. 20; Selling Price per unit is Rs. 30. Find the maximum profit per month.

6. Solve the following games

		Player Q			
		I	II	III	IV
Player P	I	6	4	8	0
	II	6	8	4	8
	III	8	4	8	0
	IV	0	8	0	16

7. What is the difference between PERT & CPM? Discuss the merits and demerits of PERT.