

B.B.A. Semester - 5 (Remedial) (NEP-2020) Examination**March/April-2026****Operations Research for Business Decisions (Minor-5)****Time: 2:00 Hours****Marks:50****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

- Que.1 (A) What is Operations Research? (05)
 (B) Give any three definitions of operations research. (05)

OR

- Que.1 (A) Explain Role of O.R. in business and industry.
 (B) State and Explain characteristics of O.R.
- Que.2 (A) What is transportation problem? (05)
 (B) Explain Modi Method for solving Transportation problem. (05)

OR

- Que.2 Find Initial solution of given Transportation problem by (i) North west corner rule method (ii) matrix minima method and examine both answers are same or different? (10)

Plant/warehouses	W ₁	W ₂	W ₃	W ₄	W ₅	Supply
P ₁	20	28	32	55	70	50
P ₂	48	36	40	44	25	100
P ₃	35	55	22	45	48	150
Demand	100	70	50	40	40	300/300

- Que.3 (A) What is assignment problem? (05)
 (B) Explain unbalance ness in assignment problem. (05)

OR

- Que.3 Five different machines can do any of the five required jobs, with different profits resulting from each assignment as shown in the adjoining table. Find out maximum profit possible through optimal assignment. (10)

Job/Machine	A	B	C	D	E
1	30	37	40	28	40
2	40	24	27	21	36
3	40	32	33	30	35
4	25	38	40	36	36
5	29	62	41	34	39

- Que.4 (A) What is Linear Programming Problem? (05)
 (B) Explain Graphic Method. (05)

OR

- Que.4 Solve the following LPP by graphic method. (10)

$$\text{Max } Z = 4x_1 + 3x_2$$

Subject to constraints

$$3x_1 + 4x_2 \leq 24$$

$$8x_1 + 6x_2 \leq 48$$

$$x_1 \leq 5$$

$$x_2 \leq 6$$

$$x_1, x_2 \geq 0$$

Que.5 (A) Explain Simplex Method. (05)

(B) Explain (i) Surplus variable (ii) Slack Variable (iii) Artificial variable. (05)

OR

Que.5 Solve the following LPP by Simplex Method. (10)

$$Z_{\text{Max}} = 9x_1 + 10x_2$$

Subject to Constraints

$$11x_1 + 9x_2 \leq 9,900$$

$$7x_1 + 12x_2 \leq 8,400$$

$$6x_1 + 16x_2 \leq 9,600$$

$$x_1, x_2 \geq 0$$
