

Roll No.

Total No. of Pages : 03

Total No. of Questions : 09

BBA (Sem.-5)

OPERATION RESEARCH

Subject Code : BBA-501-18

M.Code : 78193

Date of Examination : 05-07-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTIONS-B** consists of **FOUR** Sub-sections : Units-I, II, III & IV.
3. Each Sub-section contains **TWO** questions each, carrying **TEN** marks each.
4. Student has to attempt any **ONE** question from each Sub-section.

SECTION - A

- I. Write a short note on the following :**
 - a. Operations Research Techniques
 - b. Simplex Method
 - c. Optimality Test in Transportation
 - d. Travelling Salesman Problem
 - e. Hungarian Method
 - f. Define Jobs.
 - g. PERT
 - h. Replacement Policy
 - i. Production Rate
 - j. Crashing of Network

SECTION - B

UNIT - I

2. Using the principle of duality solve the following problem : Minimize $z = 4x_1 + 14x_2 + 3x_3$
- Subject to : $-x_1 + 3x_2 + x_3 \geq 3$.
- $2x_1 + 2x_2 - x_3 \geq 2$,
- $x_1, x_2, x_3 \geq 0$.
3. What is Operations Research? Explain briefly its applications.

UNIT - II

4. Find the optimal Solution of following Transportation Problem :

Source	Destination			Available
	1	2	3	
1	50	30	190	10
2	80	45	150	30
3	220	180	50	40
Requirement	40	20	20	80

5. What is Unbalanced Assignment Model? Is it solved by HAM?

UNIT - III

6. Determine the optimal sequence of performing 5 jobs on 4 machines. The machines are used in the order M_1, M_2, M_3 and M_4 and the processing time is given below :

Job	M_1	M_2	M_3	M_4
1	8	3	4	7
2	9	2	6	5
3	10	6	6	8
4	12	4	1	9
5	7	5	2	3

7. What is Network Analysis? How time bound projects are analyzed? Explain with suitable example.

UNIT - IV

8. A firm is considering the replacement of a machine, whose cost price is 12,200 and its scrap value is 200. From experience the running (maintenance and operating) costs are found to be as follows :

Year	:	1	2	3	4	5	6	7	8
Running cost (Rs.)	:	200	500	800	1,200	1,800	2,500	3,200	4,000

When should the machine be replaced?

9. Why Inventory Management is required? Explain different models which are used in Inventory Management.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.