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Total No. of Pages : 03

Total No. of Questions : 10

MBA (Sem.-3)
OPERATION RESEARCH APPLICATIONS

Subject Code : MBA-952-18

M.Code : 77056

Date of Examination : 18-12-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A contains EIGHT questions carrying TWO marks each and students has to attempt ALL questions.
2. SECTION-B consists of FOUR Subsections : Units-I, II, III & IV. Each Subsection contains TWO questions each carrying EIGHT marks each and student has to attempt any ONE question from each Subsection.
3. SECTION-C is COMPULSORY and consist of ONE Case Study carrying TWELVE marks.

SECTION-A

1. Write briefly :

- a) Usefulness of Operation Research in decision making process.
- b) Any two definitions of OR.
- c) Function of Artificial Variables in simplex procedure.
- d) Definition of Linear Programming.
- e) Define Assignment Problem.
- f) Applications of Dynamic Programming.
- g) Merits and Demits of PERT.
- h) Network Diagram.

SECTION-B

UNIT-I

2. State the opportunities and shortcomings of operation research.
3. State three commonly used OR techniques in India. Briefly explain each one of them.

UNIT-II

4. Vitamins A & B are available in two different foods P & Q. One unit of P contains 2 units of vitamin A and 3 units of vitamin B. One unit of Q contains 5 units of Vitamins A and 4 units of Vitamin B. The minimum daily consumption of vitamin A and B should be 1000 and 1500 units respectively. One unit of P costs Rs. 5 and one unit of Q costs Rs. 6. What should be the intake of P & Q in order to minimise cost.
5. What are the characteristics of Dual problem and what are its advantages?

UNIT-III

6. Find the Feasible Solution of the following transportation problem using North-West Corner Method.

	Warehouse				Supply
	W ₁	W ₂	W ₃	W ₄	
F ₁	14	25	45	5	6
Factory F ₂	65	25	35	55	8
F ₃	35	3	65	15	16
Requirement	4	7	6	13	30\30

7. What is Queueing Theory? What information can be obtained by analysing a queueing system?

UNIT-IV

8. Discuss the various kinds of Non-linear programming problems.

9. The activities involved in a project are detailed below: Construct the network diagram with the following activities:

Job	Optimistic	Most Likely	Pessimistic
1→2	3	6	15
2→3	6	12	30
3→5	5	11	17
7→8	4	19	28
5→8	1	4	7
6→7	3	9	27
4→5	3	6	15
1→6	2	5	14
2→4	2	5	8

SECTION-C

10. A company has faced with the problem of assigning five jobs to five machines; each job must be done on only one machine; the cost of processing each job on each machine is given below (in Rs.)

Machines

	M ₁	M ₂	M ₃	M ₄	M ₅
J ₁	7	5	9	8	11
J ₂	9	12	7	11	10
J ₃	8	5	4	6	9
J ₄	7	3	6	9	5
J ₅	4	6	7	5	11

The problem is to determine the assignment of jobs to machines so that it will result in minimum cost.

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