

MS - 51

Management Programme

ASSIGNMENT
For
January 2023 and July 2023 Sessions

MS - 51: Operations Research

**(Last date of submission for January 2023 session is 30th April, 2023
and for July 2023 sessions is 31st October, 2023)**



School of Management Studies
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
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ASSIGNMENT

Course Code	:	MS - 51
Course Title	:	Operations Research
Assignment Code	:	MS - 51/TMA/JAN/2023
Coverage	:	All Blocks

Note: Attempt all the questions and submit this assignment to the Coordinator of your study centre. Last date of submission for January 2023 session is 30th April, 2023 and for July 2023 session is 31st October, 2023.

1. The ABC Company has been a producer of picture tubes for television sets and certain printed circuits for radios. The company has just expanded into full-scale production and marketing of AM and AM-FM radios. It has built a new plant that can operate 48 hours per week. Production of an AM radio in the new plant will require 2 hours, and production of an AM-FM radio will require 3 hours. Each AM radio will contribute Rs 40 to profits, while an AM-FM radio will contribute Rs 80 to profits.

The marketing department, after extensive research has determined that a maximum of 15 AM radios and 10 AM-FM radios can be sold each week

- a) Formulate a linear programming model to determine the optimum production mix of AM and FM radios that will maximize profits.
- b) Solve this problem using the graphical method.

2. Discuss briefly:

- a) The general similarities between dynamic programming and linear programming.
- b) How dynamic programming differs conceptually from linear programming?

3. A company has three plants at locations A, B, and C, which supply to a warehouse located at D, E, F, G, and H. monthly plant capacities are 800, 500 and 900 units, respectively. Monthly warehouse requirements are 400, 400, 500, 400 and 800 units. Unit transportation costs (in `) are given below. Determine an optimum distribution for the company in order to minimize the total transportation cost.

		To				
		D	E	F	G	H
From	A	5	8	6	6	3
	B	4	7	6	6	5
	C	8	4	6	6	4

4. What constitutes inventory ordering costs, carrying costs and stock-out costs? Explain the behaviour and relationship of these costs.

5. A has two ammunition stores, one of which is twice as valuable as the other. B is an attacker who can destroy an undefended store, but he can only attack one of them. A can successfully defend only one of them. A learns that B is about to attack one of the stores but does not know which. What should he do?