Management Programme

ASSIGNMENT
For
January 2022 and July 2022 sessions

MS – 51: Operations Research

**(Last date of submission for January 2022 session is 30th April, 2022
and for July 2022 session is 31st October, 2022)**

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School of Management Studies
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068

Course Code	:	**MS-51**
Course Title	:	**Operations Research**
Assignment No.	:	**MS-51/TMA/JAN/2022**
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 2022 session is 30ᵗʰ April, 2022 and for July 2022 session is 31ˢᵗ October, 2022**.

1. What is operations research? What are the characteristics of operations research? Discuss the significance and scope of operations research in modern management.

2. A construction company has undertaken three projects, one each in City A, City B and City C. Each project requires a specific supply of raw material which the firm sources from the Cities D, E, F, and G. Shipping costs (in rupees) differ from location to location. The following table summarizes the problem the manager of the construction firm faces:

From	To			Available supply (tons)
	A	B	C	
D	400	500	250	1350
E	600	450	200	750
F	350	150	250	1200
G	450	250	350	900
Demand(tons)	1800	1500	1650	

The contractor learns that due to some difficulties, currently no shipments are possible between the cities D and A, and between F and C.

   a) Obtain the optimal transportation plan for the contractor. Calculate the total cost. At what location is some supply going to be short? By how much?

   b) Is the solution in (a) is unique. If not, identify another optimal solution.

   c) Write the dual of this problem and use the values of the dual variables to check the optimal solution.

3. What is Goal programming? What are the steps involved in Goal programming model formulation? Discuss the applications of Goal programming with suitable examples.

4. A manufacturing company uses Rs. 10,000 worth of an item during the year. He has estimated the ordering costs as Rs. 25 per order and carrying costs as 12.5$ of average inventory value. Find the optimal order size, number of orders per year, time period per order and the total cost.

5. Write a short note on the following:

    i. Characteristics of a queuing model

    ii. Zero – sum two person games.

    iii. Steps in the simulation process.

    iv. Random experiment and probability.