Batch 1, Practical

VPM's
DR VN BRIMS, Thane
Programme: MMS (2021-23)
Second Semester Regular Examination October 2022

Course Name	**Operations Research**	**Course Code**	C03
Roll No.		**Marks**	60
Total No. of Questions	6	**Duration**	3 Hours
Total No. of printed pages	1	**Date**	10.10.2022

Course Outcome Statements:

CO1: Recall the concepts of operations research and relate with business problems
CO2: Interpret business insights for optimization of business problems
CO3: Apply appropriate operations research tools in relevant business scenarios
CO4: Examine the business problems and prescribe probable solutions
CO5: Recommend alternate solutions to business problems

Instructions: -

Q. No 1 (All Questions are Compulsory)

Q. No.		Questions	Marks	BL	CO
Q. 1		Case/Case-let Study (500-800 words)			
	a.	An airline offers coach and first-class tickets. For the airline to be profitable, it must sell a minimum of 25 first-class tickets and a minimum of 40 coach tickets. The company makes a profit of $225 for each coach ticket and $200 for each first-class ticket. At most, the plane has a capacity of 150 travellers. By using Excel Solver, Determine-How many of each ticket should be sold in order to maximize profits.	**6**	**Level 4**	**CO4**
	b.	Will the optimum solution change in the case estimated demand for the number of coach tickets and a number of first-class tickets does not exceed 115 and 35 respectively? As an OR/DA executive what changes/decisions would you recommend to the planning team taking demand constraints into the consideration by analyzing the sensitivity reports?	**6**	**Level 5**	**CO5**
Q. 3		Answer the Q3. a			
	a.	A Manufacturing Company has three resource facilities and four markets to serve. The demand of each market and the capacity of each resource facility is as per the below tab. The unit cost required to transport one unit of product from the resource facility to the respective market is also tabulated below. Assign the facilities to each market in such a way that the total cost of transportation is minimized. Determine quantities to be transported from each assigned resource facility.	**6**	**Level 4**	**CO4**

Location	D1-Mumbai	D2-Nagpur	D3-Gujrat	D4-Delhi	Factory Capacity/ Supply
Q1- Bhiwandi	3	1	7	4	300
Q2-Thane	2	6	5	9	400
Q3- Ambernath	8	3	3	2	500
Requirement	250	350	400	200	

Q. 4		Answer Q.4 a					
	a.	The Time taken by four programmers to complete each of the four programs A, B, C, and D is tabulated below. Assign each program to the programmer in such a way that the overall time taken by four programmers is minimized. Each programmer should get any one of the four programs. Time is in minutes.	**6**	**Level 3**	**CO3**

	A	B	C	D
1	120	100	80	90
2	80	90	110	70
3	110	140	120	100
4	90	90	80	90