Enrolment No. _____

AHMEDABAD UNIVERSITY

AMRUT MODY SCHOOL OF MANAGEMENT

POSTGRADUATE PROGRAMME

2023-2024 WINTER SEMESTER

END SEMESTER EXAMINATION

TOD522 Supply Chain Management

Date: 28-04-2024 Total Marks: 40

Time: 05.00 pm – 07.00 pm No. of printed pages: 02

During a test, people look up for inspiration, down in desperation and left and right for information. Avoid left and right.

Question 1: Give an LP formulation that maximizes DART's return on investment in a year. (15 marks)

Because of the poor air quality in Dallas (partly due to too many private cars in the traffic), DART wants to start up 4 new routes: between Plano and Dallas, between Richardson and Addison, between Plano and Richardson, and between Richardson and Dallas. Plano and Dallas municipalities put down $800,000 and $200,000, respectively, to finance these routes. DART is facing the question of investing a total of $1,000,000 (=800,000+200,000) to four routes such that at least 80% of the investment is made for the routes involving Plano and at least 30% of the investment is made for the routes involving Dallas. Richardson - Addison and Plano - Richardson routes are almost of equal length and DART can make a profit at the rate of 20% per year for each dollar invested. These rates are 0% for the Plano - Dallas route and 10% for the Richardson - Dallas route.

Question 2:

a. Using the forecasting technique discussed in class, write in detail the steps involved to forecast the demand for next 3 time period: (10 marks)

Year	Quarter	Demand
1	1	98
	2	108

	3	102
	4	116
2	1	130
	2	120
	3	121
	4	138
3	1	130
	2	128
	3	147
	4	138
4	1	134
	2	158
	3	145

b. Suppose the regression model after deseasonalized demand is $D = 103 + 3T$, find demand for next 3 time periods.

Question 3:

a. What are the 3 cost involved in making the lot size decision? Explain in 2-3 lines. Also write the total cost equation which needs to be minimized to find the optimal order quantity. (4 marks)

b. List down and explain any 5 information related metrics and inventory related metrics (3 marks)

c. How can a home delivery company like Peapod use pricing of its delivery services to improve profitability? (2 marks)

d. Demand for deskpro computers at best buy is 1000 units per month. Best buy incurs a fixed order placement, transportation and receiving cost of $4000 each time an order is placed. Each computer costs best buy $500 and sells it at $800. The retailer has an annual holding cost of 20%. Evaluate the number of computers that the store manager should order in each replacement lot. (6 marks)