Name: Enrolment No:	

UPES

End Semester Examination, May 2024

Course: Supply Chain Analytics **Semester: VI**

Program: Integrated (BBA) - (MBA) – Operations Management **Time: 03 hrs.**

Course Code: DSBA3011 **Max. Marks: 100**

Instructions:

SECTION A
10Qx2M=20Marks

S. No.		Marks	CO
Q1	Select the correct answer(s).		CO1
1.1	1. Which of the following is not a primary goal of supply chain optimization? A) Maximizing efficiency B) Minimizing costs C) Maximizing customer satisfaction D) Maximizing inventory levels	2	CO1
1.2	Which location factor is not typically considered in supply chain network optimization? A) Proximity to suppliers B) Transportation infrastructure C) Labor costs D) Distance to competitors	2	CO1
1.3	Which analytical technique is commonly used for inventory optimization? A) Linear programming B) Regression analysis C) Decision trees D) Cluster analysis	2	CO1
1.4	Which type of analytics focuses on predicting future outcomes based on historical data? A) Descriptive analytics B) Prescriptive analytics C) Predictive analytics D) Diagnostic analytics	2	CO1
1.5	What is the primary objective of using machine learning algorithms in supply chain analytics? A) To analyze past performance B) To predict future trends C) To determine the root causes of inefficiencies D) To visualize data effectively	2	CO1
1.6	Which type of optimization problem aims to find the best solution from all feasible solutions? A) Convex optimization	2	CO1

	B) Stochastic optimization C) Heuristic optimization D) Global optimization		
1.7	What is the main benefit of employing real-time analytics in supply chain management? A) Decreased responsiveness to market changes B) Improved decision-making based on current data C) Increased reliance on historical data D) Longer lead times for problem resolution	2	CO1
1.8	Which analytics technique is used to identify patterns and relationships in large datasets? A) Regression analysis B) Data clustering C) Time series analysis D) Hypothesis testing	2	CO1
1.9	Which factor is not typically considered when selecting a supplier? A) Quality standards B) Ethical practices C) Proximity to competitors D) Financial stability	2	CO1
1.10	Which of the following is a key component of network design in supply chain management? A) Supplier segmentation B) Lead time reduction C) Capacity planning D) Customer segmentation	2	CO1
SECTION B 4Qx5M= 20 Marks			
Q2	Answer the questions below with a short note.		CO2
2.1	Kindly define and explain the following with one numerical example (for each) from the supply chain: Descriptive Analytics.	5	CO2
2.2	Kindly define and explain the following with one numerical example (for each) from the supply chain: Predictive Analytics.	5	CO2
2.3	Kindly define and explain the following with one numerical example (for each) from the supply chain: Prescriptive Analytics.	5	CO2
2.4	List the main steps in a data analytics project from start to finish.	5	CO2
SECTION-C 3Qx10M=30 Marks			
Q3	Answer the questions below with an explanation.		CO2
3.1	Explain the linear programming method of optimization used in supply chain analytics.	10	CO2
3.2	Explain (in your own words) the following single point location finding method with an example: Centre of Gravity Method.	10	CO2

3.3	Explain (in your own words) the following network optimization models/algorithms with an example. 1. The shortest path problem 2. The minimum spanning tree problem	10	CO2
	SECTION-D **2Qx15M= 30 Marks**		
Q4	Answer the questions below with a detailed explanation. Quaker Chemical used its Business Intelligence (BI) system to change completely the way it manages accounts receivable. In the past, the process of keeping track of whether customers paid their bills, and if they paid them on time, was primarily the purview of employees in the accounting department. Collection managers used the company's accounting system to identify which accounts were overdue, but they had limited information about the details of overdue balances. As a result, they had visibility only into glaring payment problems—customers who hadn't paid their bills at all in 60 days or more—and couldn't proactively identify which customers were at risk for not paying in full. Occasionally, they asked a sales manager to get involved, but the whole process for identifying which customers weren't paying and why they weren't paying and putting salespeople on the case was ad hoc. To improve accounts receivable, Quaker Chemical decided in early 2005 that salespeople needed to play a larger, more formal role in the collections process. After all, they were the ones who had the primary relationship with the customers and had opportunities to speak with them more often, more proactively, and more sympathetically about their outstanding payments. To get the salespeople involved, the IT department created a data mart that extracted accounts receivable information from transaction systems: It analyzed historical payments and historical balances by customer and by transaction and then loaded it into the data warehouse. By using its BI tools from SAS to analyze factors such as the amount of time it took Quaker Chemical to collect payment from a customer on a given invoice, as well as the number of times a customer paid part, but not all, of what he or she owed, the company was able to identify which customers were consistently paying late and which customers weren't paying at all. The IT department programmed the data warehouse to run reports automatically on which customers still owed money to Quaker Chemical. The system would then send those reports directly to the sales manager in charge of those accounts several times a month so that they could follow up with those customers. Collections managers no longer have to keep tabs on this information manually. Quaker CIO Irving Tyler says this business process change was successful in part because IT was careful to deliver only the most specific, relevant information in these reports to salespeople. "If you don't focus the information and deliver it intelligently, people won't understand how to incorporate it into their workflows," says Tyler. This kind of dramatic change in process needs to be linked to the overall business strategy, according to Tyler. "Information doesn't necessarily change anything. You have to have a strategy to drive any change," he says. Quaker Chemical demonstrates that BI is about more than decision support. As a result of improvements in the technology and the way CIOs are implementing it, BI now has		CO3

	the potential to transform organizations. CIOs like Quaker Chemical's Tyler who successfully use BI to improve business processes contribute to their organizations in more far-reaching ways than by implementing basic reporting tools. "Our BI system provides information that helps us seek out greater efficiency," says Tyler.		
4.1	What are some of the business benefits of BI deployments such as those implemented by Quaker Chemical?	15	CO3
4.2	Quaker Chemical implemented systems and processes that affect the practices of the salespeople. In which ways did Quacker Chemical benefit from these new implementations? Also, discuss alternative ways for companies (Quaker, etc.) to foster the adoption of new systems like these.	15	CO3