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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MBA

SEM: III - THEORY EXAMINATION (2024 - 2025)

Subject: Supply Chain Management and Demand Forecasting

Time: 3 Hours Max. Marks: 100

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A 20

1. Attempt all parts:-

1-a. Which of the following is a key characteristic of a Pull System? (CO1, K1) 1

(a) High economies of scale

(b) Low set up change costs

(c) High inventory levels

(d) Long lead times

1-b. In a Pull System, which factor is typically high due to the need to respond to customer demands? (CO1, K2) 1

(a) High demand variability

(b) Low manufacturing variability

(c) High economies of scale

(d) Long fulfillment cycle times

1-c. Cyclical trends in time series data are characterized by: (CO2, K2) 1

(a) Short-term fluctuations that last a few days

(b) Movements that recur over several years

(c) Changes that occur randomly with no pattern

(d) Seasonal changes within a single year

1-d. A company records sales data over a year and observes higher sales in December. The company uses this observation to adjust its forecast for December. This type of adjustment is based on: (CO2, K2) 1

(a) Random variation
(b) Trend adjustment
(c) Seasonal adjustment
(d) Cyclical adjustment

1-e. How does JIT achieve cost reduction? (CO3, K1) 1

(a) By increasing safety stock
(b) Through zero defects, zero inventory, and elimination of non-value-added activities
(c) By maximizing lead times
(d) Through rigid scheduling and production

1-f. What is the primary goal of supply network optimization? (CO3, K2) 1

(a) Maximizing inventory levels
(b) Minimizing costs while meeting service-level requirements
(c) Increasing production rates regardless of efficiency
(d) Reducing the number of suppliers in the chain

1-g. Which of the following is NOT an example of strategic capacity planning? (CO4, K1) 1

(a) Building a new plant
(b) Scheduling workers for peak hours
(c) Expanding warehouse space
(d) Investing in scalable technologies

1-h. What is a common challenge when dealing with bottlenecks? (CO4, K2) 1

(a) High forecasting accuracy
(b) Overutilization of resources
(c) Identifying constraints in processes
(d) Increased production efficiency

1-i. Which supply chain is designed for high-margin, innovative products? (CO5, K1) 1

(a) Risk-hedging
(b) Responsive
(c) Efficient
(d) Agile

1-j. SMART criteria do NOT include: (CO5, K2) 1

(a) Specific
(b) Ambiguous
(c) Measurable
(d) Time-bound

2. Attempt all parts:-

2.a. Explain inbound logistics. (CO1, K2) 2

2.b. Differentiate between market simulation and test marketing methods of demand 2

forecasting. (CO2, K2)

2.c. Describe one benefit of CPFR for improving customer service in supply chain operations. (CO3, K4) 2

2.d. Mention two key elements of capacity assessment during the planning process. (CO4, K2) 2

2.e. Explain hybrid push-pull strategy, and how does it benefit organizations in managing their supply chain? (CO5, K2) 2

SECTION-B 30

3. Answer any five of the following:-

3-a. Explain the relationship between supply chain value, customer satisfaction, and supply chain efficiency. Provide an example to illustrate your explanation. (CO1, K2) 6

3-b. Explain the functions of logistics management. (CO1, K1) 6

3-c. Compare qualitative and quantitative forecasting techniques. Provide an example of when each method would be most appropriate. (CO2, K3) 6

3-d. Describe forecasting errors? Explain the terms Mean Absolute Error (MAE) and Mean Squared Error (MSE) with their formulas. (CO2, K4) 6

3.e. Discuss the seven basic types of waste identified in the JIT philosophy and how addressing these wastes impacts production efficiency. (CO3, K3) 6

3.f. Outline the steps involved in the process of capacity planning. (CO4, K2) 6

3.g. Differentiate between efficient and responsive supply chains with examples. (CO5, K2) 6

SECTION-C 50

4. Answer any one of the following:-

4-a. Discuss the evolution of Ford's supply chain and its transition from vertical integration to global supply chain networks. How has this shift impacted efficiency and cost management? (CO1, K4) 10

4-b. Evaluate the role of the Toyota Production System (TPS) and Just-in-Time (JIT) in creating an efficient and lean supply chain. Explain the benefits and challenges of this approach? (CO1, K2) 10

5. Answer any one of the following:-

5-a. Name the components of a time series, giving one example for each one of them. (CO2, K4) 10

Compute 3 yearly moving averages for the following data showing yearly sales('000) of a company for 10 years.

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sales	8	9	8	10	9	12	13	14	12	15

5-b. Discuss the Forecasting Process in detail, and analyze how an organization can reduce Forecast Errors effectively. (CO2, K2) 10

6. Answer any <u>one</u> of the following:-

6-a.	Evaluate the merits and demerits of implementing a JIT system. Provide examples to support how these merits and demerits can influence operational outcomes. (CO3, K3)	10
6-b.	Describe the role of suppliers in a successful JIT system. How does geographical proximity and long-term relationships contribute to achieving JIT goals? (CO3, K2)	10

7. Answer any <u>one</u> of the following:-

7-a.	Compare and contrast the advantages and disadvantages of in-house production and outsourcing. (CO4, K3)	10
7-b.	Explain the process of make or buy analysis and its relevance to supply chain efficiency. (CO4, K2)	10

8. Answer any <u>one</u> of the following:-

8-a.	Explain the concept of strategic fit and its importance in supply chain management. (CO5, K2)	10
8-b.	Discuss the risks associated with using a push strategy in supply chains, especially in markets with high demand variability. Provide examples to support your points. (CO5, K2)	10