

Date
27/10/25

Time: 2 1/2 Hours

Total Marks: 75

N.B.:

- 1) All Questions are compulsory with internal choice options and carry 15 marks each.
- 2) Figures to the right indicate full marks
- 3) Use of simple Calculator is allowed
- 4) Working note should form part of your answer for practical questions.

Q.1) A) Choose the correct option (Any 8):

(08)

- 1) Combining several shipments into one large shipment is termed as _____
 - (a) Sorting,
 - (b) Assortment,
 - (c) Consolidation,
 - (d) Cross Docking
- 2) The main objective of _____ is to reduce the number of times the product is handled.
 - (a) Packaging,
 - (b) Transportation,
 - (c) Material Handling,
 - (d) Warehousing
- 3) _____ is defined as that quantity which one ordered the total cost of the system is minimum.
 - (a) JIT
 - (b) EOQ
 - (c) KANBAN
 - (d) Variable
- 4) Deep water port is compatible with the large heavy loaded ships which may require the water to be _____ feet deep or even more.
 - (a) 10,
 - (b) 20,
 - (c) 30,
 - (d) 40
- 5) Repairs, reuse, recycling and Re distribution are related to _____.
 - (a) Inventory management,
 - (b) Reverse Logistics
 - (c) Customer support system
 - (d) Packaging
- 6) MRP - I stands for:
 - a) Management Reaction Planning
 - b) Master Resources Production
 - c) Manufacturing Resource Planning
 - d) Materials Requirements Planning
- 7) Following is not type of Piggy - Back
 - (a) LASH
 - (b) TTFC
 - (c) COFC
 - (d) TOFC
- 8) The Lean supply chain model is also called as _____.
 - (a) Toyota approach
 - (b) Agile supply chain
 - (c) Hybrid supply chain
 - (d) Extended Lead time
- 9) The fastest and costliest mode of transport is _____.
 - (a) Air transport
 - (b) Water transport
 - (c) Ropeways
 - (d) Railways
- 10) Inbound logistic is also known as _____.
 - (a) internal logistic
 - (b) market logistic
 - (c) organizational logistics
 - (d) upstream logistics

Q.1) B) State whether the following statements are True or False (Any 7): (07)

1. A contract warehouse is a type where the depositor of the goods and the owner of the warehouse enter into contract.
2. Pipeline transportation is less harmful to the environment therefore considered as a green mode of transportation.
3. One of the causes of the Bullwhip effect is insufficient information on customer demand.
4. Reverse logistics emphasizes on anticipating customer needs and wants, developing a network to meet those needs and utilizing the network to the best possible.
5. The perfect order should also be complete in terms of all aspects of service from order receipt to delivery coupled with error free invoicing.
6. The storage and Communication of data in mechanical form is called as EDI.
7. Delphi technique is a qualitative method of demand forecasting.
8. A truck delivers products from a single supplier to multiple retailers. This is termed as central distribution.
9. Economy of weight is not a basic function of warehousing.
10. Decorative packaging refers to the additional containers and wrapping that are added for protective or marketing requirements.

Q.2) a) What is a Performance Management System? Explain the importance and objectives of developing and implementing Performance Systems in Logistics? (08)

b) What is Logistical Outsourcing? Differentiate between 3PL and 4PL Logistics. (07)

OR

c) From the following data calculate a 3 period and 5 period moving average, also forecast demand for the 11th period. (10)

Period	1	2	3	4	5	6	7	8	9	10	11
Demand in Units	110	120	135	142	154	160	173	180	190	210	?

d) Explain Primary, secondary, Tertiary Packaging and unit load? (05)

Q.3) a) State various material handling equipment used for efficient handling. (08)

b) State and explain various Information Technology tools used in Logistics and Supply Chain Management to make it more efficient. (07)

OR

c) What do you mean by Logistical network analysis? Explain its objectives. (08)

d) Define Logistics. Explain Inbound and Outbound logistics with examples. (07)

Q.4) a) Elaborate the term customer service with reference to logistics and also explain elements of Customer service. (08)

b) What is a Perfect Order? Explain Internal Dimensions/ Types of Performance Measurement. (07)

OR

c) Write a detailed Note on Reorder Level and calculate the sum on ROL. Daily consumption of raw material in the production process is 210 units. Lead time for delivery is 5 days. Company's policy is to keep safety stock equal to three days' daily consumption. Calculate ROL. (10)

d) Explain the concepts: (i) Logistics parks (ii) Deep water ports (05)

Q.5)

a) **The Bullwhip Effect at Procter & Gamble**

Procter & Gamble (P&G), a multinational consumer goods company, operates a complex global supply chain. In the 1990s, P&G faced significant challenges in managing its supply chain, including inventory fluctuations, stock outs, overproduction, and inefficient transportation. P&G's supply chain consists of multiple tiers of suppliers, manufacturers, and distributors. The company's products, such as diapers and shampoo, are manufactured and distributed globally.

Analysis revealed that small changes in consumer demand for P&G's products amplified as they moved up the supply chain. This resulted in the Bullwhip Effect (Bullwhip effect refers to the phenomenon where small changes in consumer demand amplify as they move up the supply chain, causing oscillations and inefficiencies) and also: Increased variability in orders, Overproduction and inventory buildup, Inefficient transportation and logistics, Higher costs and reduced customer satisfaction.

Major findings were:

1. Demand forecast errors: P&G's forecasting methods were inaccurate, leading to over/under production.
2. Information distortion: As orders moved up the supply chain, information was distorted, amplifying demand variability.
3. Lead time variability: Long lead times and variable transportation schedules exacerbated the Bullwhip Effect.
4. Inventory policies: P&G's inventory policies, such as just-in-time (JIT) and economic order quantity (EOQ), contributed to the problem.

The Consequences of the Bullwhip Effect resulted in:

Operational Consequences such as:

Inventory levels increasing by 30%, Forecast accuracy decreasing by 20%, Stock outs increasing by 15%, Transportation costs increasing by 12%, Overproduction and inventory buildup, Inefficient transportation and logistics, Higher costs and reduced customer satisfaction

Financial Consequences:

Increased inventory holding costs, Higher transportation costs, lost sales due to stock outs (estimated \$100 million annually), Obsolete inventory write-offs (estimated \$50 million), Reduced profitability.

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Strategic Consequences: Eroded customer loyalty, Competitive disadvantage due to inefficient supply chain, Difficulty in responding to changing market demands, Limited ability to innovate and adapt to new technologies.

Organizational Consequences: Increased stress and workload on supply chain teams, decreased morale and motivation among employees, Difficulty in attracting and retaining top talent, Strained relationships with suppliers and partners

The Bullwhip effect had significant operational, financial, strategic, and organizational implications for Procter & Gamble, highlighting the need for effective supply chain management and collaboration.

Questions

1. What is the Bullwhip Effect, and how did it impact P&G's supply chain? (05)
2. Analyze the causes of the Bullwhip Effect in P&G's supply chain. (05)
3. Discuss potential solutions and their feasibility to mitigate or reduce the Bullwhip Effect? (05)

OR

Q.5)

c) Write short notes on (Any 3):

- 1) Benefits of Warehousing
- 2) ABC Vs MBC
- 3) Golden Quadrilateral
- 4) Pipeline mode of transport
- 5) Reverse Logistics

(15)

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