TOTAL MARKS: 75 **DURATION: 2 ½ Hours**

NOTE:

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) _____ Logistics is the decision to buy logistics services from external sources rather than operate in house.
(a) Reverse, (b) Green, (c) Outsourcing, (d) Standard

2) _____ warehouse is a combination of both private and public warehouse.
(a) Agricultural, (b) Cold chain, (c) Custom, (d) Contractual

3) _____ is not an objective of inventory management.
(a) Minimising waste, (b) Optimum utilisation of space,
(c) Blockage of investment, (d) Avoid over ordering

4) The primary goal of the _____ logistics cycle is to move products or materials backward through the distribution network.
(a) Green, (b) Reverse, (c) Inbound, (d) Outbound

5) Lack of communication between members of supply chain leads to _____ effect.
(a) Miscommunication, (b) Bull- Whip, (c) Classical, (d) Bad

6) In _____ method of demand forecasting an attempt is made to develop forecast through group consensus.
(a) Delphi (b) Naive (c) Consumer Survey (d) Regression

7) A unit train is also known _____ train.
(a) Resident, (b) Flat car, (c) Block, (d) Freight

8) Elimination of waste is an important characteristic of _____ supply chain.
(a) Lean (b) Hybrid (c) Agile (d) Global

9) _____ is not an I.T. related tool used in Logistics.
(a) EDI, (b) RFID, (c) ERP, (d) S-OS

10) The main objective of _____ is to reduce the number of times the product is handled.
(a) Packaging, (b) Transportation, (c) Material Handling, (d) Warehousing

Q.1) b) True or False (Any 7): **(07)**

1) Deep water ports are ports which has the capability to accommodate a fully loaded ship.
2) Consumer packaging aims at attractive appeal and information sharing.
3) TOFC is a type of Fishy back.
4) Transportation creates time utility.
5) COFC stands for Container on Flat car.
6) Ensuring perfect order is one of the objective of Packaging function.
7) Double stack container is form of intermodal freight transport.
8) Outbound logistics deals with procurement of spare parts and raw materials.
9) Maritime logistics involves shipment of goods (cargo) and people by sea and other waterways.
10) Regression analysis is a qualitative method of demand forecasting.

Q2) a) Explain the concept of Logistics with the help of any 6 functions of Logistics. **(08)**

b) What do you mean by Warehousing? Explain Warehousing Strategies **(07)**

"OR"

c) From the following data calculate a 4 period weighted moving average with weights as 4, 3, 2 and 1. The largest weight is assigned to most recent period and current demand value. Also forecast the demand for 9th month. **(10)**

Period (Month)	1	2	3	4	5	6	7	8	9
Demand in Units	100	120	130	135	145	150	160	175	?

d) Explain the concept of packaging with the help of its any four functions. **(05)**

Q.3) a) Explain the concept of Supply Chain Management with the help of steps involved in the process of supply chain. **(08)**

b) What is Inter Modal Transportation? Explain various Inter Modal Combinations. **(07)**

"OR"

Q.3) c) What do you mean by customer service? Explain 7R's for achieving perfect order. **(08)**

d) What are different Global Logistics trends? Justify with examples. **(07)**

Q.4) a) Distinguish Between 3PL and 4PL (08)

b) Explain in detail role of Pipeline and Ropeways mode of transportation in building a sustainable economy. (07)

"OR"

Q.4) c) Explain the concept of EOQ with the help of a diagram and solve the sum on EOQ. The annual demand of an item is 4200 units. The unit cost is Rs. 8. The inventory carrying rate is 30%. The cost of procurement is Rs. 200. Calculate EOQ. (10)

d) Explain the concepts: (i) Logistics parks, (ii) Dedicated Freight Corridor (05)

Q.5) a) Case Study: Supply Chain and Logistics Challenges in a Quick Commerce Company- (15)

FlashCart is a fast-growing Quick Commerce (Q-commerce) startup that delivers groceries and essentials within 15–20 minutes across urban areas. It operates through a network of dark stores and a fleet of delivery riders. While the model attracted rapid user growth, the company soon faced major supply chain and logistics issues that began impacting service quality and profitability.

A key challenge was **inventory mismanagement** at dark stores. Poor demand forecasting and lack of real-time stock visibility led to frequent stockouts of high-demand items and overstocking of slow-moving ones. This resulted in lost sales and declining customer satisfaction.

Last-mile delivery posed another problem. Delivery riders often faced delays due to traffic, inaccurate addresses, and lack of optimized routing. FlashCart's early systems did not support dynamic rider assignment or efficient route planning, leading to missed delivery targets and customer complaints.

Replenishment delays from central warehouses to dark stores further disrupted operations. Without scheduled restocking or proper vehicle planning, stores ran out of key products, increasing downtime and logistical costs.

The company also struggled during **demand surges**, especially during peak hours and bad weather. Limited rider availability, system overloads, and poor workforce planning led to late deliveries and high rider attrition. FlashCart's cost structure worsened due to high rider incentives, low batching efficiency, and low average order values—making the business model financially unsustainable.

To tackle these issues, FlashCart adopted AI-based demand forecasting, real-time inventory tracking, and route optimization software. It also introduced structured replenishment schedules, surge prediction tools, and incentive-based staffing during peak hours. To improve profitability, the company increased minimum order values, batched deliveries more effectively, and removed unprofitable SKUs.

Within six months, these changes yielded significant results: stock-out rates dropped by 35%, on-time deliveries improved from 78% to 91%, and cost-per-delivery fell by 20%. Customer satisfaction (NPS) also rose significantly.

Ultra-fast delivery requires seamless coordination across inventory, logistics, and workforce planning. While the 15-minute model is attractive to consumers, sustainable growth depends on continuous optimization, efficient systems, and cost control.

Answer the below mentioned questions based on the above case:

1) What are the key operational components of Flashcart Q-Commerce firm? How does it aim to fulfil its 15–20-minute delivery promise? **(05)**

2) What are the main supply chain and logistics problems faced by FlashCart? **(05)**

3) Highlight specific solutions related to problems of dark stores, inventory management, delivery, and cost efficiency. **(05)**

"OR"

Q.5) c) Write short notes on (Any 3): **(15)**

1) RORO

2) Reverse Logistics

3) RFID and EDI

4) Activity Based Costing

5) Objectives of performance measurement in supply chain.