



**INDIAN INSTITUTE OF MATERIALS MANAGEMENT**  
**Post Graduate Diploma in Materials Management**  
**Graduate Diploma in Materials Management**  
**PAPER No. 11**  
**LOGISTICS & SUPPLY CHAIN MANAGEMENT**

**Dec 2013**

Date : 20.12.2013  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks :100  
Duration : 3 Hrs.

**Instructions:**

1. **PART A** is compulsory. Answer all questions. Total marks = 32
  2. From **PART B**, answer any three questions. Each question carries 16 marks. Total marks = 48
  3. **PART C** is **Case Study** and is compulsory. Answer the questions reflecting through understanding of the case. Total marks = 20
  4. Please read instructions on the answer sheet carefully.
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**PART A**

**32 marks**

(compulsory- Attempt all Questions each question carries 1 mark)

**Q1. State TRUE or FALSE - 1 Mark each (8 Marks)**

1. Logistics is essential in both manufacturing and service sectors.
2. Warehousing activities do not relate to warehouse layout, design, automation etc.
3. Outsourcing reduces the need for costly real estate to hold inventory.
4. GDP is the total value of goods and services produced during a certain period.
5. Customer service is not the key interface between Marketing and Logistics.
6. Quick response is generally a retail sector strategy.
7. Pareto's 80/20 rule can provide a basis for a more effective service strategy.
8. Inbound logistics addresses the bulk movement of material or subassemblies.

**Q2. Fill in the Blanks - 1 Mark each (8 Marks)**

1. The perfect order is achieved when customer \_\_\_\_\_ are met fully.
2. Packing is essential to \_\_\_\_\_ the handling / storage of materials.
3. There are four types of utilities: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
4. A \_\_\_\_\_ is nothing but integration of internal and external functions.
5. Modern warehousing lays emphasis on flow \_\_\_\_\_ of materials.
6. A warehouse primarily acts as a \_\_\_\_\_ facility between the plant and the customer.
7. Truck, rail, water, pipeline and air are transportation \_\_\_\_\_ options.
8. A \_\_\_\_\_ is a group of organizations doing trading at a market-place.

**Q3. A. Expand the following abbreviations (1 mark each) (8 Marks)**

- |        |         |        |        |
|--------|---------|--------|--------|
| 1. B2E | 2. RFID | 3. RSE | 4. RDC |
| 5. CSM | 6. RL   | 7. 3PL | 8. HML |

**Q4. Match the following in column A with those in column B - 1 Mark each (8 Marks)**

<b>Column A</b>		<b>Column B</b>	
1	Logistics function	<b>A</b>	Warehousing
2	Focus on core competency	<b>B</b>	Selective inventory control
3	Transport activity	<b>C</b>	AS/RS equipment
4	Customer priority rules	<b>D</b>	Materials Handling and Storage
5	Storage of products	<b>E</b>	FIFO method
6	Randomized storage	<b>F</b>	3PL benefit
7	Carousels	<b>G</b>	Order processing
8	Golf analysis	<b>H</b>	Equipment, People and Decisions

**PART B**

**48 marks**

**(Attempt any three each question carries 16 marks)**

Q5. Discuss in detail with examples about objectives of logistics management.

Q6. Discuss in detail with examples about phases of customer service.

Q7. How packaging design strategies can be developed? Write briefly on each of them.

Q8. Write briefly on logistics information management system.

Q9. Define reverse logistics. Bring out the challenges in reverse logistics.

## **PART C**

### **Q.10 : CASE STUDY ( Compulsory )**

**20 Marks**

Ford Motor Company, one of the world's largest automotive manufacturers, has worked with Penske on several Six Sigma initiatives. As its lead logistics provider (LLP), Penske's quality team of associates are trained in Six Sigma practices and work closely with Ford to streamline operations and create and maintain a more centralized logistics network. Together, they uncovered several areas for real cost savings as a result of reducing inbound carrier discrepancies, eliminating unnecessary premium costs and reducing shipment overages. Plus, Penske implemented accountability procedures and advanced logistics management technologies to gain more visibility of its overall supply network.

Today, Ford owns and produces automobiles under several major brands: Ford, Lincoln, Mercury, Mazda, Land Rover, Aston Martin and Volvo. They maintain one of the automotive industry's most complex manufacturing, transportation and distribution networks.

Penske Logistics began its relationship with Ford as lead logistics provider (LLP) for Ford's assembly plant in Norfolk, Va. At the time, each of Ford's 20 North American assembly plants managed its own logistics operations. A decentralized approach provided total control of logistics at the plant level, but presented costly redundancies in materials handling and transportation.

Ford conducted studies to determine the benefits of transitioning the company's decentralized logistic operations to a centralized approach. The decision was quickly apparent—centralization of the company's logistics operations would increase both velocity and visibility throughout the network, as well as reduce supply chain costs.

Shortly thereafter, Ford selected Penske as its North American LLP. Under the contract, Penske would centralize and manage all inbound materials handling for 19 assembly plants and seven stamping plants.

Penske immediately developed an aggressive logistics transition program with Ford. Penske would provide Ford with a single point of contact for all logistics operations.

By working with individual plants and corporate management, Penske established a baseline of current operations and outlined the proposed solutions. The new logistics program would establish a Penske Logistics Center that included the following core functions:

- Network Design Optimization—implement a more efficient inbound materials strategy through Origin Distribution Centers (ODCs)

- Carrier and Premium Freight Management—manage all carriers and logistics companies, while reducing premium freight costs
- Information Technology System Integration—achieve real-time visibility of supply chain shipments, schedules and orders
- Finance Management—improve freight bill payment, claim processing and resolution throughout the supply chain

Upon development of this new plan, the Penske/Ford team began evaluating Ford's existing network design. Under the plant-centric approach, suppliers would make multiple deliveries of the same parts to different plants. A supplier would pick up a small load, deliver it to one plant, pick up another small load of the same parts and deliver it to another plant. Carriers with half-empty trucks would often cross routes with each other en route to the same plant. Aside from being highly inefficient, this design allowed for excessive inventory and storage costs at the plant level.

To centralize transportation and distribution operations, Penske implemented a new network design consisting of 10 new ODCs. The ODCs would be a central delivery point for suppliers. Different supplier shipments going to the same plant would now be cross-docked into trailers at the ODC. Loads would be consolidated and delivered on a scheduled basis to reduce the amount of milkruns, less than truckload shipments (LTL) and premium freight charges. To meet Penske's new transportation and distribution standards, more than 1,500 suppliers were trained on new uniform procedures.

For carrier and premium freight management, Penske's goal was simply stated: maximize carrier service, minimize carrier costs. Penske refined Ford's carrier bidding process by placing more stringent requirements on carrier partners. Carriers were now required to meet specific safety, equipment and technological specifications; provide experienced and certified drivers; and show proven experience of on-time delivery/pickups.

Penske's new procedures required carriers to meet established route pick-up and delivery windows within 15 minutes of the scheduled time. Additionally, carriers would supervise loading and unloading operations to verify order accuracy, adequate packaging and labeling, and freight damage.

With new stringent carrier requirements in place, Penske closed the accountability loop by implementing a Carrier Rating System. All incidents would be recorded and reported. Carriers would issue corrective action reports for actions that negatively impacted Ford's operations. If a carrier accumulated an excessive amount of incidents on their "scorecard," Penske would issue a low carrier rating, thus jeopardizing the carrier's ability to participate in future bids.

Penske also implemented several information technology solutions throughout the logistics network, including its proprietary Logistics Management System and RouteAssist, an advanced routing tool.

Other programs included a Web-based metric reporting system and order tracking software. Drivers were provided with PDA scanners and an electronic driver log. Carriers were now required to have satellite communications and engine monitoring systems on all trucks for load tracking. ODCs were provided with integrated RF cross-dock scanners that tracked the delivery of individual parts.

Prior to implementing a centralized approach, Ford was unable to gain a clear view of the financial status of logistics operations. With approximately 1,500 suppliers handling more than 20,000 shipments per week, freight billing was complicated. As part of its carrier management system, Penske would now provide drivers with a single set of paperwork procedures to ensure delivery documentation was collected and submitted to accounting. Penske developed a new freight billing system that would capture freight costs and allocate those costs by plant. As a result, Ford could see which plants had the highest and lowest freight costs and which carriers were most cost effective.

In approximately 18 months, Penske had completely transitioned Ford's logistics operations to a centralized network design. More than 700 inbound and 500 outbound trailers now move to and from Ford's ODCs per day, with most loads carrying at 95 percent capacity. Shipments are consolidated at the ODC and previously unused cross-docking space is now in high demand. Fourteen million pounds of freight are cross-docked each day, resulting in an inventory reduction of 15 percent.

Suppliers and carriers currently operate under a single set of transportation and distribution procedures, enabling better service throughout the supply chain. The level of accountability established with Penske's Carrier Rating System has enabled Ford to rid its distribution network of costly, ineffective carriers.

With uniform technologies, ODCs are able to monitor shipments, identify inefficiencies and address materials handling issues in a real-time environment. Furthermore, logistics costs now enter the supply chain immediately. This allows Ford to see overall supply chain costs and per plant allocations at any given point in time superior supplier quality. Today, with a century of automotive achievement behind them, Ford and Penske continue to redefine the highest standards for logistics and operational efficiency.

### **Questions**

1. Discuss the challenges faced by Ford Motor Company.
2. How the logistical operations for Ford Motor Company be consolidated?
3. What are the core functions in new logistical program?
4. Explain the new centralized network for Ford's logistics operations.

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