R4668

Sub. Code
25MLM2C1

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Logistics and Supply Chain Management

PRODUCTION AND OPERATIONS MANAGEMENT

(CBCS – 2025 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions by choosing the correct option.

1. Which type of manufacturing system is best suited for producing a high volume of highly standardized products? (CO1, K2)

   (a) Job Shop

   (b) Project System

   (c) Continuous / Assembly Line

   (d) Batch / Intermittent

2. Dismantling and inspecting a competitor's product to discover product improvements is called : (CO1, K2)

   (a) Standardization

   (b) Modularization

   (c) Reverse Engineering

   (d) Value Engineering

3. The primary objective of capacity planning in operations management is to : (CO2, K2)

(a) Determine the exact location of the plant

(b) Match the capacity of the system with future demand

(c) Design the layout of the facility

(d) Schedule daily production tasks

4. Locational Break-Even Analysis is a method used to evaluate facility location alternatives based on : (CO2, K2)

(a) Distance and transportation time

(b) Total cost (Fixed and Variable costs)

(c) Qualitative factors like community attitude

(d) Employee availability

5. Which study method is primarily used to eliminate unnecessary motions and find the best way to perform a task? (CO3, K2)

(a) Time Study

(b) Method study

(c) Break-even Analysis

(d) Capacity planning

6. "Normal Time" in work measurement is calculated by multiplying the observed time by the : (CO3, K2)

(a) Allowance factor

(b) Rating factor (performance rating)

(c) Standard time

(d) Number of workers

7. A layout where equipment and machinery are grouped according to the sequence of operations needed to assemble a specific product is called : (CO4, K2)

(a) Process Layout

(b) Cellular Layout

(c) Fixed-Position Layout

(d) Product Layout

8. The Production Planning and Control (PPC) function that involves releasing orders and instructions to the shop floor is known as: (CO4, K2)

(a) Routing

(b) Dispatching (Action Phase)

(c) Scheduling

(d) Follow-up (Control Phase)

9. The Japanese term "Kaizen" in modern production management refers to : (CO5, K2)

(a) Mistake-proofing

(b) Continuous improvement

(c) Just-in-Time delivery

(d) Business Process Reengineering

10. In Project Management, the acronym PERT stands for : (CO5, K2)

(a) Program Evaluation and Review Technique

(b) Project Execution and Reporting Tool

(c) Production Estimation and Routing Technique

(d) Process Evaluation and Review Tool

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Analyze the differences between a Job Shop manufacturing system and a Batch/Intermittent manufacturing system. (CO1, K4)

Or

(b) Explain the concepts of Standardization and Modularization in product design. (CO1, K4)

12. (a) Describe the importance of Capacity Planning for manufacturing and service industries. (CO2, K2)

Or

(b) Outline the facility Design process and mention any two techniques used in it. (CO2, K2)

13. (a) Describe the basic procedure of Process Planning in a manufacturing setup. (CO3, K3)

Or

(b) Apply the concepts of Work-Study. Distinguish between Time-Study and Method-Study. (CO3, K3)

14. (a) Discuss the objectives and factors required for a good plant layout. (CO4, K3)

Or

(b) Explain the different phases of Production Planning and Control (PPC) : Planning Phase, Action Phase and Control Phase. (CO4, K3)

15. (a) Explain the concept and benefits of Just-In-Time (JIT) and Lean Manufacturing. (CO5, K2)

Or

(b) Describe the use of Gantt Charts and CPM (Critical Path Method) in project management. (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words.

16. (a) Evaluate the characteristics, advantages, and limitations of Continuous/Assembly Line and Project Systems. (CO1, K5)

Or

(b) Evaluate the role of Product Design in operations management. How does Reverse Engineering serve as a strategic tool in product design? (CO1, K5)

17. (a) Explain the strategies involved in Capacity Planning. Detail how capacity is determined for a service industry compared to a manufacturing industry. (CO2, K2)

Or

(b) Describe Locational Break-Even Analysis in detail. Provide a conceptual example of how it is used to choose between three different facility locations based on fixed and variable costs. (CO2, K2)

18. (a) Analyze the evolution of Normal and Standard Time in Work-Study. Detail the mathematical relationship between observed time, performance rating, and allowances. (CO3, K4)

Or

(b) Analyze the specific characteristics of Production Process Systems. How do these characteristics dictate the type of study methods applied? (CO3, K4)

19. (a) Analyze the layout design procedure utilizing computerized layout techniques. Explain the functions of CRAFT and ALDEP. (CO4, K4)

(OR)

(b) Discuss the concept of Aggregate Production Planning. How does it link strategic goals to shop-floor scheduling? Also, briefly explain Assembly Line Balancing. (CO4, K4)

20. (a) Evaluate the impact of Modern Production Management Tools on organizational efficiency. Focus your discussion on TQM, ISO 9000 Series, and Poka-Yoke. (CO5, K5)

Or

(b) Evaluate the differences and applications of PERT and CPM in project management. How do they help in optimizing scheduling and continuous improvement? (CO5, K5)

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R4669

Sub. Code
25MLM2C2

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Logistics and Supply Chain Management

PEOPLE MANAGEMENT

(CBCS – 2025 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Who is considered the father of HRM? (CO1, K1)
   (a) Henry Fayol (b) Peter Drucker
   (c) Edwin Flippo (d) Gary Dessler

2. One of the present-day challenges in HRM is: (CO1, K1)
   (a) Technological advancements
   (b) Market research
   (c) Cost-cutting
   (d) None of the above

3. What is induction in HRM? (CO2, K2)
   (a) Training for new employees
   (b) Process of firing employees
   (c) A method of employee transfer
   (d) A salary determination process.

4. Which of the following is NOT a method of executive training? (CO2, K2)

(a) Coaching

(b) Internship

(c) Job rotation

(d) Management development programs

5. What is the main disadvantage of external recruitment? (CO3, K1)

(a) Higher training costs

(b) Lower chances of getting new skills

(c) Employee dissatisfaction

(d) Poor performance evaluation

6. Which of the following is an external source of recruitment? (CO3, K1)

(a) Job rotation

(b) Promotions

(c) Employment agencies

(d) Internal transfers

7. Which of the following is NOT a component of compensation? (CO4, K1)

(a) Salary (b) Bonus

(c) Fringe benefits (d) Employee discipline

8. What does ESOP stand for? (CO4, K1)

(a) Employee Salary Optimization Plan

(b) Employee Stock Ownership Plan

(c) Employer Salary Offer Program

(d) Employee Savings and Ownership Program.

9. Which act ensures employee safety in factories? (CO5, K2)

(a) Factories Act, 1948

(b) Industrial Disputes Act, 1947

(c) Trade Unions Act, 1926

(d) Payment of Wages Act, 1936

10. Which organization sets workplace safety standards in India? (CO5, K2)

(a) RBI (b) BOCW

(c) ISRO (d) NSC

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Analyze the main functions of Human Resource Management from a "Systems Perspective." (CO1, K4)

Or

(b) Analyze the specific challenges faced by HR professionals in the context of "Global MNCs" vs. local startups. (CO1, K4)

12. (a) Analyze the importance of "Proper Placement and Induction" in reducing early stage employee turnover. (CO2, K3)

Or

(b) Illustrate the role of HRIS (Human Resource Information Systems) in effective manpower planning. (CO2, K3)

13. (a) Analyze the difference between "Job Description" and "Job Specification" and their roles in the recruitment process. (CO3, K4)

Or

(b) Differentiate between "Promotion, Demotion and Transfer" as internal mobility strategies. (CO3, K4)

14. (a) Analyze the core objectives of "Wage and Salary Administration" for a labor- intensive organization. (CO4, K3)

Or

(b) Illustrate the relationship between "Employee Morale" and organizational productivity. (CO4, K3)

15. (a) Analyze the role of "Government Agencies" in ensuring workplace safety and implementing labor laws. (CO5, K4)

Or

(b) Analyze the primary causes of "Industrial Conflicts" in the modern Indian manufacturing sector. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) "A company is moving from a hierarchical structure to a flat, agile structure" – Evaluate the necessary changes in its HR structure and strategy. (CO1, K5)

Or

(b) Provide a detailed analysis of a case study illustrating "Successful HRM Practices" in a Fortune 500 company. (CO1, K5)

17. (a) "A mid-sized logistics firm is expanding to the EU and facing high driver turnover." Create a comprehensive "Strategic Recruitment and Selection" plan. (CO2, K5)

Or

(b) Evaluate the effectiveness of "Outsourcing as a Strategy" for non-core HR functions like payroll and benefits administration. (CO2, K5)

18. (a) A tech firm needs to upskill its workforce in AI. Design a "Training & Development Program" and formulate a method for its evaluation (e.g.. Kirkpatrick Model). (CO3, K6)

Or

(b) Formulate a "Career Development Plan" that integrates delegation, empowerment and leadership transition planning. (CO3, K6)

19. (a) Evaluate the impact of "Quality of Work Life (QWL)" and "Stress Management" programs on long-term employee retention. (CO4, K5)

Or

(b) Design a comprehensive "Compensation and Fringe Benefits" package for a firm looking to attract top-tier executive talent. (CO4, K5)

20. (a) A factory is facing a strike due to wage disputes. Evaluate the conflict and formulate a resolution strategy under the "Industrial Disputes Act, 1947." (CO5, K6)

Or

(b) Formulate a framework for "Workers Participation in Management (WPM)" to improve industrial relations in a unionized environment. (CO5, K6)

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R4670

Sub. Code
25MLM2C3

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Logistics and Supply Chain Management

SUPPLY CHAIN FINANCE OPERATIONS

(CBCS – 2025 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. The "Financial Impact" of SCF is primarily seen in: (CO1, K2)

   (a) Increased fixed assets

   (b) Optimized Working Capital

   (c) Higher tax rates

   (d) Reduced sales staff.

2. For a CEO, the primary "Value Proposition" of SCF is: (CO1, K1)

   (a) More debt

   (b) Improved Free Cash Flow (FCF)

   (c) Lower employee turnover

   (d) Higher office rent.

3. Which financial statement represents a "Snapshot" of a firm's financial position at a point in time? (CO2, K1)

(a) Income Statement

(b) Balance Sheet

(c) Cash Flow Statement

(d) Statement of Retained Earnings.

4. A decrease in "Days Payable Outstanding" (DPO) generally leads to: (CO2, K2)

(a) Higher liquidity (b) Lower liquidity

(c) No change (d) Higher profit

5. The "Quick Ratio" excludes which of the following from current assets? (CO3, K1)

(a) Cash

(b) Accounts Receivable

(c) Inventory

(d) Marketable Securities

6. Which ratio measures how effectively a firm uses its "Plant and Equipment"? (CO3, K2)

(a) Fixed Asset Turnover

(b) Current Ratio

(c) Debt-to-Equity

(d) Gross Margin

7. In a KPI Tree, "Return on Invested Capital" (ROTC) is driven by: (CO4, K2)

(a) Operating Margin and Capital Turnover

(b) Only Sales

(c) Only Taxes

(d) Only Interest

8. "Cost of Capital" (WACC) is used as a: (CO4, K1)

(a) Hurdle rate for project selection

(b) Marketing budget

(c) Sales target

(d) Legal fee

9. Supply Chain Network modeling primarily aims to: (CO5, K2)

(a) Increase rent

(b) Minimize Total Landed Cost

(c) Reduce headcount

(d) Only focus on speed.

10. The DuPont Model decomposes ROE into: (CO5, K2)

(a) Profit Margin, Asset Turnover, and Equity Multiplier

(b) Sales and HR

(c) Debt and Tax

(d) Inventory and Cash

Part B ($5 \times 5 = 25$)

Answer **all** questions not more than 500 words each.

11. (a) Analyze the interrelationship between the Physical Supply Chain and the Financial Supply Chain from a "Value Chain" perspective. (CO1, K3)

Or

(b) Illustrate the "Value Proposition" of SCF for a Tier-2 supplier facing liquidity constraints. (CO1, K3)

12. (a) An Indian manufacturing firm has the following data: (CO2, K4)

Annual Credit Sales: Rs. 1,00,00,000 | Cost of Goods Sold: Rs. 70,00,000

Average Inventory: Rs. 10,00,000 | Average Accounts Receivable: Rs. 15,00,000

Average Accounts Payable: Rs. 8,00,000 Calculate the Cash Conversion Cycle (CCC) in days (Take 1 Year = 365 days).

Or

(b) Analyze the relationship between the Cash Flow Statement and "Liquidity Management" in a high-growth startup. (CO2, K4)

13. (a) A logistics company has Total Assets of Rs. 50,00,000 and Total Debt of Rs. 20,00,000. Its EBIT is Rs. 8,00,000 and Interest Expense is Rs. 1,50,000. Calculate the Debt-to-Equity Ratio and Times Interest Earned (TIE). Comment on its solvency. (CO3, K3)

Or

(b) Illustrate the impact of "Foreign Exchange Fluctuations" on the valuation of cross-border supply chain assets. (CO3, K3)

14. (a) TN Tech Logistics is considering a warehouse automation project. The CEO requires a valuation based on the company's Weighted Average Cost of Capital(WACC).

Equity: 10,00,000 shares outstanding at a market price of Rs. 120 per share.

Cost of Equity: 14%.

Debt: Rs. 4,00,00,000 in 9% Debentures.

Corporate Tax Rate: 30%.

Required:

(i) Calculate the Market Value of Equity and the Total Value of the Firm.

(ii) Calculate the After-tax Cost of Debt.

(iii) Compute the WACC. (CO4, K4)

Or

(b) Evaluate why supply chain projects often fail due to a lack of "Competitive Advantage" analysis. (CO4, K4)

15. (a) Analyze how "Cost Behavior" (Fixed vs. Variable) affects Supply Chain Network modeling decisions. (CO5, K3)

Or

(b) Illustrate the criteria used for "Location Selection" in a global supply chain to optimize tax and logistics costs. (CO5, K3)

Part C ($5 \times 8 = 40$)

Answer **all** questions not more than 1000 words each.

16. (a) A CEO needs to improve the firm's ROIC. Evaluate how optimizing Supply Chain Finance can drive organizational success and propose a strategy. (CO1, K5)

Or

(b) Create a framework that explains the "Multiple Perspectives" (Buyer, Supplier, Bank) of an SCF program. (CO1, K5)

17. (a) A firm reports the following for the year 2024:

Net Profit: Rs. 15,00,000

Depreciation charged: Rs. 3,00,000

Increase in Inventory: Rs. 2,00,000

Decrease in Trade Receivables: Rs. 1,50,000

Decrease in Trade Payables: Rs. 1,00,000

Prepare the Cash Flow from Operating Activities (Indirect Method). Briefly explain why Net Profit is different from Cash Flow in a supply chain context.

(CO2, K4)

Or

(b) Assess the strategic role of "Reorganized Financial Statements" in providing a clearer view of operating performance than traditional GAAP statements.

(CO2, K4)

18. (a) A logistics firm, "Bharat Express," purchased a fleet of heavy-duty trucks on April 1, 2023, for Rs. 2,00,00,000. The estimated useful life is 8 years with a residual (salvage) value of Rs. 20,00,000. For the financial year ending March 2024, the company reported:

(i) Total Revenue: Rs. 4,50,00,000

(ii) Operating Expenses (excluding depreciation): Rs. 3,10,00,000

(iii) Current Assets: Rs. 80,00,000 | Current Liabilities: Rs. 40,00,000

Required:

(1) Prepare a brief Income Statement extract to find the Net Profit (assume a tax rate of 25%).

(2) Calculate the Fixed Asset Turnover Ratio (using the net book value of the trucks at the end of Year 1).

(3) Calculate the Return on Capital Employed (ROCE) if the total equity is Rs. 1,50,00,000 and long-term debt is Rs. 50,00,000. (CO3, K5)

Or

(b) Design a financial statement "Primer" for a non-finance Supply Chain Manager, explaining the linkage between "Inventory levels" and "Balance Sheet health." (CO3, K5)

19. (a) A Chennai-based automotive component manufacturer is looking to improve its Return on Equity (ROE) through better Supply Chain Management. The current financial data for the company is as follows:

Net Sales: Rs. 5,00,00,000

Net Profit: Rs. 40,00,000

Total Assets: Rs. 2,50,00,000

Total Shareholder Equity: Rs. 1,25,00,000

The Challenge: The Supply Chain Manager proposes a "Lean Inventory" initiative.

This is expected to:

Reduce Total Assets to Rs. 2,00,00,000 (by clearing excess stock).

Increase Net Profit to Rs. 45,00,000 (due to lower warehousing and carrying costs).

Equity remains unchanged at Rs. 1,25,00,000.

Required:

(i) Calculate the Current ROE using the DuPont three-pillar formula.

(ii) Calculate the Proposed ROE after the Lean initiative.

(iii) Analyze which component of the DuPont model contributed most to the change in ROE.

(iv) Briefly explain how "Supply Chain Network Design" could further help in reducing the Total Asset base. (CO4, K5)

Or

(b) Formulate a "Project Implementation" roadmap for an SCF solution, covering the phases from "Project Selection" to "Project Completion." (CO4, K4)

20. (a) Design a "Supply Chain Network" for a retail firm that integrates financial strategy with operational efficiency. (CO5, K5)

Or

(b) A company is struggling with low Return on Equity (ROE). Formulate a competitive business strategy using the "DuPont Model" to identify and fix the lever (Margin, Efficiency, or Leverage). (CO5, K6)

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R4671

Sub. Code
25MLM2C4

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Logistics and Supply Chain Management

LOGISTICS LEGAL LAW

(CBCS – 2025 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Under Sec 2(d) of the Indian Contract Act, "Consideration" must move at the desire of: (CO1, K1)

   (a) The Promisor (b) The Promisee

   (c) A Third Party (d) The Government

2. An agreement enforceable by law is defined as a contract under which section? (CO1, K1)

   (a) 2(h) (b) 2(e)

   (c) 10 (d) 11

3. Under the Bill of Lading Act 1855, the transfer of a Bill of Lading to a consignee results in: (CO2, K2)

   (a) Transfer of liability only

   (b) Transfer of rights and liabilities

   (c) Only physical possession

   (d) Insurance coverage.

4. Which international standard regulates the carriage of goods by sea to ensure uniformity in shipowner liability? (CO2, K2)

(a) Hague-Visby Rules

(b) IT Rules

(c) GST Act

(d) Factories Act

5. The Railways Act 1989 defines the responsibility of a railway administration as that of a: (CO3, K2)

(a) Bailee (b) Common Carrier

(c) Trustee (d) Agent

6. Which forum handles consumer disputes where the value of goods/services exceeds Rs.10 Crores? (CO3, K2)

(a) District Commission

(b) State Commission

(c) National Commission

(d) Supreme Court

7. The MARPOL convention, overseen by the IMO, primarily focuses on: (CO4, K2)

(a) Ship speed

(b) Prevention of pollution from ships

(c) Crew wages

(d) Cargo weight

8. "TEU" in container shipping stands for: (CO4, K2)

(a) Total Equivalent Unit

(b) Twenty-foot Equivalent Unit

(c) Transport Efficiency Union

(d) Tanker Entry Unit

9. In a "Time Charter,' the charterer pays for: (CO5, K2)

(a) Only the cargo

(b) Hire for a specific period

(c) Only the fuel

(d) The purchase of the ship

10. Multi-modal transport involves the use of at least: (CO5, K2)

(a) One mode

(b) Two different modes

(c) Three modes

(d) Four modes

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Analyze the role of "Free Consent" in logistics service contracts and the legal implications of Coercion vs. Undue Influence. (CO1, K4)

Or

(b) Illustrate the legal rights of a Bailor when a warehouseman fails to exercise "reasonable care" under the Indian Contract Act. (CO1, K3)

12. (a) Analyze the statutory implications of the Bill of Lading Act 1855 regarding the "Transfer of Rights of Suit." (CO2, K4)

Or

(b) Examine the specific role of the Bill of Lading as a "Document of Title" in international trade finance. (CO2, K4)

13. (a) Compare the carrier's liability limits under the Carriage by Road Act 2007 against the Railways Act 1989 for high-value cargo. (CO3, K3)

Or

(b) Illustrate the process for filing a cargo loss complaint in a State Consumer Redressal Forum, emphasizing the limitation period. (CO3, K3)

14. (a) Analyze the strategic significance of the "East-West" global sea route for Indian exporters. (CO4, K4)

Or

(b) Examine the role of the International Maritime Organization (IMO) in implementing "Sulphur Cap" regulations for vessels. (CO4, K4)

15. (a) Illustrate the differences in risk and cost allocation between a "Voyage Charter" and a "Bareboat Charter". (CO5, K4)

Or

(b) Analyze how "Vessel Capacity" and "Tracking Innovations" influence modern freight pricing strategies. (CO5, K4)

Part C ($5 \times 8 = 40$)

Answer **all** questions not more than 1000 words each.

16. (a) A logistics provider fails to deliver temperature-sensitive pharmaceuticals due to an avoidable breakdown. Evaluate the "Discharge of Contract" by breach and formulate the appropriate legal remedies for the shipper. (CO1, K5)

Or

(b) Create a comprehensive "Contract of Agency" for a global freight forwarder that clearly defines the Agent's "Authority in Emergency" as per Sec 189. (CO1, K5)

17. (a) Critically evaluate the evolution of carriage agreements from the 1855 Act to the digital era, focusing on the "Role of Bill of Lading in Shipping Contracts". (CO2, K5)

Or

(b) A third-party claims ownership of goods mid-transit. Assess the legal complexities of "non-contractual obligations" and "Third-party rights" in maritime law. (CO2, K5)

18. (a) Design a risk mitigation framework for a common carrier to handle "Act of God" defenses under the Carriers Act 1865. (CO3, K5)

Or

(b) Evaluate the effectiveness of the Consumer Protection Act in resolving disputes related to "deficient" logistics services in the e-commerce sector. (CO3, K5)

19. (a) A shipping line is planning a route from Mumbai to Rotterdam. Develop a trade route optimization plan that integrates IMO regulations on Hazardous Goods (IMDG Code). (CO4, K5)

Or

(b) Evaluate the impact of Ro-Ro (Roll-on/Roll-off) vessels on the efficiency of intra regional trade in the BIMSTEC region. (CO4, K5)

20. (a) Formulate a comparative strategy for a firm to choose between "Conference Freight Systems" and "Competitive (Open) Systems" in a volatile market. (CO5, K6)

Or

(b) Create a freight structure for a multi-modal transport network (Sea-Rail-Road) that addresses the liability gaps between different transport acts. (CO5, K6)

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R4672

Sub. Code
25MLM2C5

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Logistics and Supply Chain Management

EXPORT & IMPORT MANAGEMENT

(CBCS – 2025 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Which department is primarily responsible for ensuring adherence to export control regulations? (CO1, K1)

   (a) Finance Department

   (b) Export Compliance Department

   (c) Marketing Department

   (d) Logistics Department

2. Record-keeping in international trade is mainly required for: (CO1, K2)

   (a) Advertising

   (b) Legal compliance

   (c) Price fixation

   (d) Market expansion

3. Export distributor agreements mainly define: (CO2, K2)

(a) Customs valuation

(b) Rights and responsibilities of parties

(c) Product classification

(d) Foreign exchange rates

4. Ongoing sales transactions differ from isolated transactions because they: (CO2, K4)

(a) Occur only once

(b) Are illegal

(c) Involve repeated dealings

(d) Do not require documentation

5. Import purchase documentation is essential to: (CO3, K2)

(a) Promote exports

(b) Ensure smooth procurement

(c) Avoid marketing costs

(d) Reduce production

6. Import distributor agreements mainly support: (CO3, K3)

(a) Domestic sourcing

(b) International procurement relationships

(c) Advertising strategy

(d) HR planning

7. The General Rules of Interpretation are used for: (CO4, K2)

(a) Contract drafting

(b) Product classification

(c) Freight negotiation

(d) Insurance settlement

8. Transaction value method refers to: (CO4, K1)

(a) Export price

(b) Price actually paid or payable

(c) Estimated market price

(d) Government-notified value

9. Manufacturing drawback relates to: (CO5, K2)

(a) Export incentives

(b) Import prohibition

(c) Domestic taxation

(d) Foreign exchange control

10. Counter trade transactions mainly involve: (CO5, K2)

(a) Cash payments only

(b) Exchange of goods or services

(c) Government subsidies

(d) Insurance contracts

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Explain the role of export and import compliance departments in international trade. (CO1, K2)

Or

(b) Discuss the importance of manuals of procedures in export-import operations. (CO1, K3)

12. (a) Describe isolated and ongoing export sales transactions. (CO2, K2)

Or

(b) Explain the significance of export distributor agreements. (CO2, K3)

13. (a) Outline the key documents used in import purchase transactions. (CO3, K2)

Or

(b) Discuss the role of import sales agent agreements. (CO3, K3)

14. (a) Explain the concept of product classification under customs law. (CO4, K2)

Or

(b) Describe the role and responsibilities of customs brokers. (CO4, K3)

15. (a) Explain the types of duty drawback. (CO5, K2)

Or

(b) Discuss the importance of foreign processing and assembly operations. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Analyze the legal and compliance requirements involved in organizing export and import operations. (CO1, K4)

Or

(b) Examine the role of software and record-keeping systems in ensuring export-import compliance. (CO1, K5)

17. (a) Critically evaluate exporting and sales documentation in international trade transactions. (CO2, K4)

Or

(b) Assess the impact of legal regulations on export distributor and sales agent agreements. (CO2, K5)

18. (a) Examine the procedures involved in importing and purchase documentation for ongoing transactions. (CO3, K4)

Or

(b) Evaluate the importance of proper documentation in international procurement. (CO3, K4)

19. (a) Analyze customs valuation methods used in determining import duty. (CO4, K4)

Or

(b) Evaluate the significance of country of origin rules under free trade agreements. (CO4, K5)

20. (a) Discuss specialized exporting practices such as drawback and foreign processing operations. (CO5, K4)

Or

(b) Examine the role of barter and counter trade in international business. (CO5, K5)

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R5048

Sub. Code
654401

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Fourth Semester

Logistics and Supply Chain Management

WAREHOUSE AND DISTRIBUTION MANAGEMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the objective questions by choosing the correct option.

1. Which of the following is a primary function of a warehouse? (CO1, K1)

   (a) Manufacturing goods

   (b) Storing goods to balance supply and demand

   (c) Selling goods directly to end consumers only

   (d) Disposing of all inventory

2. A "Public Warehouse" is best described as: (CO1, K2)

   (a) A warehouse owned by the government only

   (b) A warehouse owned by a company for its own exclusive use

   (c) A facility that rents space to various companies for a fee

   (d) A warehouse open to the public for shopping

3. "Cross-docking' is a logistics practice where: (CO2, K1)

(a) Goods are stored for long periods

(b) Goods are received and shipped immediately with minimal storage

(c) Goods are manufactured on the dock

(d) Goods are returned to the supplier

4. Which picking strategy involves picking multiple orders simultaneously by grouping them together? (CO2, K2)

(a) Discrete Picking

(b) Batch Picking

(c) Zone Picking

(d) Wave Picking

5. What does the acronym AS/RS stand for in warehouse equipment? (CO3, K1)

(a) Automated Sorting and Receiving System

(b) Automated Storage and Retrieval System

(c) Advanced Shipping and Routing System

(d) Automatic Stacking and Racking System

6. A Warehouse Management System (WMS) is primarily used to: (CO3, K2)

(a) Manage employee payroll

(b) Control and track the movement and storage of materials within a warehouse

(c) Design the marketing strategy

(d) Manufacture products

7. "Physical Distribution" involves: (CO4, K1)

(a) Only the production of goods

(b) The movement of finished goods from the manufacturer to the customer

(c) The procurement of raw materials

(d) The financing of the supply chain

8. The "Total Cost Approach" in physical distribution suggests: (CO4, K2)

(a) Minimizing transportation costs regardless of inventory costs

(b) Minimizing inventory costs regardless of customer service

(c) Balancing all logistics costs (transport, inventory, warehousing) to achieve the lowest total system cost

(d) Ignoring costs to maximize speed

9. An intermediary who sells goods to retailers is typically called a: (CO5, K1)

(a) Manufacturer (b) Wholesaler

(c) Consumer (d) Agent

10. "Channel Conflict" occurs when: (CO5, K2)

(a) Channel members disagree on roles, goals, or rewards

(b) Goods are delivered on time

(c) Customers return products

(d) Suppliers offer discounts

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Explain the difference between Private and Public warehousing. What are two advantages of using a Public warehouse for a seasonal business? (CO1, K3)

Or

(b) Discuss the strategic role of warehousing in a modern supply chain. How does it add "Place Utility and 'Time Utility"? (CO1, K3)

12. (a) Describe the Receiving Process in a warehouse. What are the key checks performed during goods receipt to ensure accuracy? (CO2, K3)

Or

(b) Explain the concept of Slotting in a warehouse. Why is placing fast-moving items (Velocity Class A) near the shipping dock important? (CO2, K3)

13. (a) Compare "Block Stacking" with "Pallet Racking". Under what conditions is Block Stacking preferred (e.g., for stackable goods like beverages)? (CO3, K4)

Or

(b) Analyze the benefits of implementing a Warehouse Management System (WMS). How does it improve inventory accuracy compared to manual paper-based systems? (CO3, K4)

14. (a) Explain the functions of Physical Distribution. How does efficient distribution contribute to customer satisfaction? (CO4, K3)

Or

(b) Discuss the factors affecting Physical Distribution costs. How does the "Cost vs. Service" trade-off impact management decisions? (CO4, K3)

15. (a) Analyze the factors to consider when selecting Distribution Channel Members. Why are financial stability and market coverage critical selection criteria? (CO5, K4)

Or

(b) Explain the different types of Channel Structures (Direct vs. indirect), Provide an example of a product best suited for a Direct Channel. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Evaluate the decision to Outsource warehousing operations to a Third-Party Logistics (3PL) provider, Discuss the risks (e.g., loss of control) and benefits (e.g., flexibility) involved. (CO1, K5)

Or

(b) Analyze the impact of Value-Added Services (VAS) in warehousing (e.g., kitting, labeling, packaging). How do VAS transform a warehouse from a "Cost Center' to a distinct competitive advantage? (CO1, K5)

17. (a) Design a layout flow for a Cross-Docking facility. Explain how the synchronization of inbound and outbound trucks is critical for this operation to succeed. (CO2, K6)

Or

(b) Evaluate different Order Picking Methods (Zone, Batch, Wave). For a high-volume e-commerce warehouse with small orders, which method would you recommend and why? (CO2, K6)

18. (a) A company is considering automating its warehouse. Apply a cost-benefit analysis for installing an Automated Storage and Retrieval System (AS/RS). Discuss the high capital investment versus long-term labor savings. (CO3, K5)

Or

(b) Analyze the selection of Material Handling Equipment (MHE). How do factors like aisle width (VNA vs. Wide Aisle) and load weight influence the choice between Counterbalance Forklifts and Reach Trucks? (CO3, K5)

19. (a) Create a Physical Distribution Strategy for a perishable product (e.g., fresh milk). Discuss the importance of temperature control (Cold Chain), speed, and route optimization. (CO4, K6)

Or

(b) Evaluate the Total System Perspective in physical distribution. Explain how saving money on cheap packaging might lead to higher costs in warehousing (damages) and transport (inefficient stacking). (CO4, K6)

20. (a) Design a conflict resolution strategy for Channel Management. How can a manufacturer manage "Vertical Conflict" with its retailers over pricing or territory issues? (CO5, K6)

Or

(b) Analyze the rise of Omni-Channel Distribution. How must traditional distribution channels adapt to serve customers who shop both online and in-store? (CO5, K6)

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R5049

Sub. Code
654402

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Fourth Semester

Logistics and Supply Chain Management

ENTREPRENEURSHIP AND INNOVATION

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Which factor most critically influences the timing of launching a new venture? (CO1, K1)

   (a) Availability of office space

   (b) Market readiness and competitive landscape

   (c) Number of employees

   (d) Size of the founding team

2. The main role of the management team in a startup is to: (CO1, K1)

   (a) Handle only administrative tasks

   (b) Focus exclusively on product design

   (c) Avoid decision-making

   (d) Drive strategic direction and operational execution

3. Which external factor most significantly shapes entrepreneurial opportunities? (CO2, K2)

(a) Personal hobbies

(b) Family background

(c) Regulators environment and market trends

(d) Office environment

4. The learning life cycle in entrepreneurship primarily helps entrepreneurs to: (CO2, K2)

(a) Maintain rigid business models

(b) Continuously improve through experience and feedback

(c) Focus only on short-term profits

(d) Avoid market research

5. Strategic alliances in innovation are primarily formed to: (CO3, K3)

(a) Access complementary resources and accelerate development

(b) Outsource all internal operations

(c) Delay time-to-market for new products

(d) Avoid intellectual property registration

6. In the context of commercialization metrics, a key performance indicator is: (CO3, K3)

(a) Number of marketing interns hired

(b) Number of internal meetings held

(c) Revenue generated from new products

(d) Square footage of corporate headquarters

7. The decision to sell a growing business is often based on: (CO4, K4)

(a) Personal financial goals and market conditions

(b) Number of patents held

(c) Office location

(d) Size of the IT department

8. The growth process in entrepreneurship is best described as: (CO4, K4)

(a) Linear and predictable

(b) Dynamic and influenced by internal and external factors

(c) Unaffected by competition

(d) Isolated from market trends

9. Social entrepreneurship is primarily characterized by: (CO5, K3)

(a) Maximizing personal wealth

(b) Ignoring stakeholder needs

(c) Focusing only on product innovation

(d) Creating social value and addressing societal challenges

10. Resource acquisition for social enterprises often relies on: (CO5, K3)

(a) Solely commercial loans

(b) A mix of grants. donations and earned income

(c) Only personal savings

(d) Ignoring financial planning

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Analyse the critical factors for starting a new enterprise. (CO1, K4)

Or

(b) Explain the importance of evaluating both the opportunity and the customer before starting a business. (CO1, K4)

12. (a) Discuss the concept of sustainable entrepreneurship and its relevance in modern business. (CO2, K2)

Or

(b) Examine the strategic role of business intelligence in shaping entrepreneurial decision-making. (CO2, K2)

13. (a) Discuss different mechanisms and models technology transfer. (CO3, K3)

Or

(b) Explain the factors contributing to successful technology spin-offs. (CO3, K4)

14. (a) Analyze the process of transitioning from startup to growth. (CO4, K4)

Or

(b) Discuss the role of organizational resources and capabilities in supporting business expansion. (CO4, K4)

15. (a) Differentiate Imitative non-profit organizations and Innovative non-profit organizations. (CO5, K5)

Or

(b) Assess the strategies for scaling up successful social enterprises. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Discuss the impact of personal traits and environmental context on entrepreneurship. (CO1, K1)

Or

(b) Explain the process of determining resource needs and acquiring resources for a new venture. (CO1, K4)

17. (a) Explain the types of entrepreneurships. (CO2, K2)

Or

(b) Describe the stages of the learning life cycle model as applied to entrepreneurship. (CO2, K2)

18. (a) Evaluate the barriers and success factors in technology transfer for entrepreneurial firms. (CO3, K5)

Or

(b) Examine the role of commercialization metrics in guiding strategic decisions for innovation-driven startups. (CO3, K3)

19. (a) Explain the stages of the entrepreneurial growth process. (CO4, K4)

Or

(b) Assess the impact of leadership on managing growth in entrepreneurial ventures. (CO4, K5)

20. (a) Discuss the characteristics and challenges of hybrid and for-profit social enterprises. (CO5, K3)

Or

(b) Explain the approaches to evaluating results and measuring impact in social entrepreneurship. (CO5, K4)

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R5050	Sub. Code 6544E1

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Fourth Semester

Logistics and Supply Chain Management

Elective – PORT MANAGEMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Advanced port planning emphasizes which principle to ensure long-term competitiveness? (CO1, K2)

   (a) Maximum cargo volume irrespective of hinterland capacity

   (b) Infrastructure-led growth without market analysis

   (c) Demand-driven development aligned with trade patterns

   (d) Uniform port design regardless of cargo specialization

2. Which strategy best supports sustainable growth of port workforce productivity? (CO1, K2)

   (a) Integrating technology with continuous skill upgrading

   (b) Restricting training to managerial staff

   (c) Increasing labor strength proportionately with cargo

   (d) Outsourcing all port labor functions

3. Strategic location of ports enhances competitiveness mainly by: (CO2, K2)

(a) Increasing terminal handling charges

(b) Reducing dependence on technology

(c) Limiting competition from neighboring ports

(d) Improving access to production and consumption centers

4. The most effective conflict prevention strategy in port supply chains is: (CO2, K2)

(a) Centralization of all logistics decisions

(b) Collaborative planning and information sharing

(c) Limiting stakeholder participation

(d) Increasing port authority intervention in operations

5. Establishing a port's competitive edge in a niche market mainly involves: (CO3, K1)

(a) Uniform service offerings across all cargo types

(b) Elimination of private sector participation

(c) Expansion of land area irrespective of demand

(d) Specialization in selected cargoes or services

6. A comprehensive risk management strategy in ports should integrate: (CO3, K2)

(a) Only financial risks

(b) Only safety-related risks

(c) Operational, financial, environmental and strategic risks

(d) Risks associated solely with shipping lines

7. Berth allocation is a critical operational function because it directly affects: (CO4, K2)

(a) Port ownership structure

(b) Vessel turnaround time and congestion levels

(c) Port hinterland size

(d) Customs valuation procedures

8. Legal liabilities in port operations emphasize the need for: (CO4, K2)

(a) Complete risk avoidance

(b) Uniform global port laws

(c) Elimination of third-party service providers

(d) Strict adherence to operational and contractual standards

9. Ballast water management regulations were introduced mainly to: (CO5, K2)

(a) Improve vessel stability

(b) Reduce port turnaround time

(c) Prevent spread of invasive aquatic species

(d) Standardize port tariffs

10. Inspections, surveys and audits in ports are essential to: (CO5, K2)

(a) Eliminate port authority control

(b) Ensure continuous regulatory compliance

(c) Increase cargo handling charges

(d) Reduce private sector participation

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Trace the historical evolution of ports and highlight key transformational phases. (CO1, K4)

Or

(b) Explain strategies adopted by ports to improve labor productivity. (CO1, K4)

12. (a) Discuss the importance of connecting ports with inland infrastructure. (CO2, K3)

Or

(b) Analyze supply chain opportunities created by port integration. (CO2, K3)

13. (a) Analyze the managerial factors influencing port economic performance. (CO3, K4)

Or

(b) Examine the importance of risk identification in port management. (CO3, K5)

14. (a) Explain the scope and importance of port operations in logistics management. (CO4, K4)

Or

(b) Explain the role of offshore support agents in port logistics. (CO4, K4)

15. (a) Analyze the role of occupational safety and health administration standards in ensuring safety at ports. (CO5, K4)

Or

(b) Discuss the significance of inspections and surveys in port operations. (CO5, K3)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Analyze port transition theories and their implications for port development. (CO1, K4)

Or

(b) Examine the organizational structure of ports and its impact on efficiency. (CO1, K5)

17. (a) Examine the importance of strategic location for existing seaports. (CO2, K4)

Or

(b) Examine coordination issues between ports and inland transport stakeholders. (CO2, K4)

18. (a) Discuss how ports establish a competitive edge in niche markets. (CO3, K4)

Or

(b) Examine the impact of unmanaged risks on port growth and investment. (CO3, K5)

19. (a) Examine the significance of property leasing as a revenue and efficiency tool in ports. (CO4, K5)

Or

(b) Analyze the causes and types of port-related claims. (CO4, K4)

20. (a) Discuss the relevance of ISO 14001 for environmental management in ports. (CO5, K4)

Or

(b) Explain global regulatory compliance requirements for ships. (CO5, K4)

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R5051	Sub. Code 6544E2

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Fourth Semester

Logistics and Supply Chain Management

Elective – GREEN LOGISTICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Which approach best captures the essence of green logistics? (CO1, K2)

   (a) Minimizing cost through outsourcing

   (b) Reducing logistics lead time

   (c) Integrating environmental impact into logistics decisions

   (d) Maximizing warehouse utilization

2. Carbon auditing at supply chain level primarily focuses on: (CO1, K2)

   (a) End-to-end emission measurement

   (b) Supplier compliance costs

   (c) Individual vehicle emissions

   (d) Product pricing strategy

3. Greener road vehicles mainly focus on: (CO2, K2)

(a) Load expansion

(b) Alternative fuels and efficiency

(c) Driver wages

(d) Route density

4. Warehousing environmental impact is largely influenced by: (CO2, K2)

(a) Location branding

(b) Labor availability

(c) Storage policies

(d) Energy consumption patterns

5. Vehicle utilization improvement mainly reduces: (CO3, K2)

(a) Labor cost

(b) Fuel and emissions

(c) Packaging cost

(d) Order frequency

6. Reverse logistics is mainly associated with: (CO3, K2)

(a) Waste and returns management

(b) Forward distribution

(c) Demand forecasting

(d) Channel design

7. City logistics sustainability focuses on: (CO4, K2)

(a) Rural connectivity

(b) Urban freight efficiency

(c) Warehouse automation

(d) Global sourcing

8. Alternate fuels are adopted mainly to: (CO4, K2)

(a) Reduce vehicle cost

(b) Reduce delivery time

(c) Increased payload

(d) Cut emissions

9. Government promotes green logistics mainly through: (CO5, K2)

(a) Market forces

(b) Consumer awareness

(c) Policy instruments

(d) Private investment

10. Accreditation schemes mainly aim at: (CO5, K2)

(a) Branding

(b) Performance recognition

(c) Tax collection

(d) Cost recovery

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Explain the concept and scope of green logistics. (CO1, K4)

Or

(b) Analyze the importance of carbon transparency in logistics. (CO1, K4)

12. (a) Explain the development of greener logistics. (CO2, K4)

Or

(b) Describe features of green warehouse design. (CO2, K4)

13. (a) Explain optimization in greener logistics. (CO3, K3)

Or

(b) Discuss waste management through reverse logistics. (CO3, K3)

14. (a) Critically analyze the food miles debate. (CO4, K5)

Or

(b) Discuss cost-benefit analysis of fuel switching. (CO4, K4)

15. (a) Explain the role of government in green logistics. (CO5, K4)

Or

(b) Discuss emission reduction strategies in logistics. (CO5, K4)

Part C

(5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Discuss environmental sustainability in logistics systems. (CO1, K4)

Or

(b) Discuss challenges in measuring freight transport emissions. (CO1, K4)

17. (a) Examine greener road transport vehicles. (CO2, K5)

Or

(b) Discuss the role of innovation in logistics sustainability. (CO2, K4)

18. (a) Explain fuel efficiency improvement techniques. (CO3, K4)

Or

(b) Evaluate sustainability outcomes of logistics optimization. (CO3, K5)

19. (a) Discuss sustainability challenges in city logistics. (CO4, K4)

Or

(b) Examine environmental impact of e-business. (CO4, K5)

20. (a) Discuss policy support for logistics innovation. (CO5, K4)

Or

(b) Examine energy efficiency improvement measures. (CO5, K5)

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R5052	Sub. Code 6544E5

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Fourth Semester

Logistics and Supply Chain Management

Elective – SUSTAINABLE SUPPLY CHAIN MANAGEMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the objective questions by choosing the correct option.

1. The "Triple Bottom Line" concept of sustainability consists of which three pillars? (CO1, K1)

   (a) Profit, Products, Promotion

   (b) People, Planet, Profit

   (c) Planning, Process, Performance

   (d) Procurement, Production, Placement

2. Which of the following best describes "Greenwashing"? (CO2, K2)

   (a) Cleaning hazardous waste from factories

   (b) A marketing strategy to appear environmentally friendly without substantiating claims

   (c) The process of recycling industrial water

   (d) Using green colored packaging for eco-friendly products

3. Which mode of freight transport generally has the lowest CO_2 emissions per tonne-kilometer? (CO2, K1)

(a) Air freight

(b) Road transport (Heavy Goods Vehicles)

(c) Maritime shipping

(d) Air cargo

4. "Food Miles" refers to (CO2, K2)

(a) The calories burnt transporting food

(b) The distance food travels from the point of production to the point of consumption

(c) The amount of food wasted during transport

(d) The tax miles accrued by food exporters

5. Which certification system is widely used to rate the environmental sustainability of warehouse buildings? (CO3, K1)

(a) ISO 9001

(b) LEED (Leadership in Energy and Environmental Design)

(c) Six Sigma

(d) TQM

6. Reducing the "energy intensity" of a warehouse primarily involves: (CO3, K2)

(a) Increasing the number of forklifts

(b) Using skylights and LED lighting to reduce electricity consumption

(c) Storing more hazardous materials

(d) Increasing the speed of conveyor belts

7. What does the acronym "LCA" stand for in the context of sustainable products? (CO4, K1)

(a) Logistics Cost Analysis

(b) Life Cycle Assessment

(c) Low Carbon Audit

(d) Linear Consumption Analysis

8. In sustainable procurement, the "Kraljic Matrix" helps classify items based on: (CO4, K2)

(a) Weight and Volume

(b) Profit Impact and Supply Risk

(c) Recyclability and Toxicity

(d) Cost and Color

9. The highest priority in the "Waste Management Hierarchy" is: (CO5, K1)

(a) Recycling

(b) Disposal (Landfill)

(c) Prevention (Reduction)

(d) Energy Recovery

10. A "Closed-Loop Supply Chain" differs from a traditional supply chain because it (CO5, K2)

(a) Ends at the customer

(b) Includes the return and recovery of products for reuse or remanufacturing

(c) Uses only closed containers for shipping

(d) Does not involve external suppliers

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Explain the difference between traditional Supply Chain Management and Sustainable Supply Chain Management. Why is the shift necessary for modern businesses? (CO1, K3)

Or

(b) Describe the drivers of sustainable logistics. Discuss how government regulations and consumer pressure influence corporate green strategies. (CO1, K3)

12. (a) Analyze the environmental impact of Road Freight Transport. What are the primary pollutants emitted, and how does "Empty Running" exacerbate the problem? (CO2, K4)

Or

(b) Explain the concept of Intermodal Transport. How does combining rail and road transport contribute to reducing the carbon footprint of logistics? (CO2, K4)

13. (a) Discuss three key initiatives for creating a "Carbon Neutral" Warehouse. Focus on lighting, heating/cooling and on-site energy generation. (CO3, K3)

Or

(b) Explain the social dimension of sustainability in warehousing. Why are labor standards and worker safety considered part of the sustainability agenda? (CO3, K3)

14. (a) Compare "Green Purchasing" with "Ethical Sourcing". Provide examples of criteria a procurement manager might use for each. (CO4, K4)

Or

(b) Analyze the role of packaging in sustainability. Discuss the trade-off between using sufficient packaging to prevent product damage (and waste) versus minimizing packaging to reduce waste. (CO4, K4)

15. (a) Define Reverse Logistics. Outline the key steps in the reverse flow from the consumer back to the manufacturer. (CO5, K3)

Or

(b) Explain the concept of Resilience in the context of sustainable supply chains. How does climate change pose a risk to global supply chain continuity? (CO5, K3)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) "Economic growth and environmental protection are often seen as conflicting goals." Evaluate this statement using the Decoupling concept. Can logistics growth be decoupled from environmental degradation? (CO1, K5)

Or

(b) Analyze the "Carbon Footprint" of a global supply chain. Discuss the methodologies used to audit carbon emissions (Scope 1, 2, and 3) and the challenges in obtaining accurate data from Tier 2 and Tier 3 suppliers. (CO1, K5)

17. (a) Design a strategy for a logistics company to transition from diesel-powered trucks to Alternative Fuels. Evaluate the viability of Electric Vehicles (EVs), Biofuels, and Hydrogen for long-haul versus last-mile delivery. (CO2, K6)

Or

(b) Evaluate the "Food Miles" debate. Does sourcing food locally always result in lower emissions compared to global sourcing? Use the example of "New Zealand Lamb vs. UK Lamb" or similar case studies to justify your answer. (CO2, K6)

18. (a) A retail giant plans to build a new distribution center. Apply the principles of BREEAM or LEED to propose a sustainable design. Consider site location, water conservation, material selection, and indoor environmental quality. (CO3, K5)

Or

(b) Analyze the trade-offs involved in Centralized vs. Decentralized warehousing networks from an environmental perspective. How does the "Square Root Law" of inventory conflict with transport minimization goals? (CO3, K5)

19. (a) Create a Sustainable Procurement Policy for a fashion retailer. Address issues such as raw material sourcing (e.g., sustainable cotton), supplier code of conduct (child labor) and water usage in manufacturing. (CO4, K6)

Or

(b) Evaluate the concept of Design for Environment (DfE). How can product design influence the end-of-life disposal options (Reuse, Remanufacture, Recycle)? Provide examples from the electronics industry. (CO4, K6)

20. (a) Design a Closed-Loop Supply Chain for smartphone batteries. Identify the stakeholders involved, the incentives for return, and the processes for safe recycling or refurbishment. (CO5, K6)

Or

(b) Evaluate the risks associated with Global Outsourcing to developing nations with weak environmental regulations. How can a multinational corporation mitigate "Reputational Risk" and ensure compliance throughout its multi-tier supply chain? (CO5, K6)

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R5053

Sub. Code
6544E6

M.B.A. DEGREE EXAMINATION, APRIL – 2026

Fourth Semester

Logistics and Supply Chain Management

Elective: SUPPLY CHAIN ANALYTICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Which type of supply chain metric measures the time it takes for a company to get paid for the goods it sells? (CO1, K1)

   (a) Fill Rate
   (b) Cash-to-Cash Cycle Time
   (c) Perfect Order Fulfillment
   (d) Inventory Turnover

2. In the context of the relationship between supply chain and financial metrics, reducing inventory levels primarily improves which financial ratio? (CO2, K2)

   (a) Return on Assets (ROA)
   (b) Gross Margin
   (c) Debt-to-Equity Ratio
   (d) Accounts Payable turnover

3. In facility location modeling, a Binary Variable (0 or 1) is typically used to represent; (CO2, K1)

(a) The distance between two cities

(b) The cost of fuel per mile

(c) The decision to open or close a facility

(d) The volume of demand at a customer zone

4. The center of Gravity method (or Gravity model) locates a facility based on minimizing: (CO2, K2)

(a) The maximum distance to any customer

(b) the weighted average distance to customers (Demand *Distance)

(c) The fixed cost of the facility

(d) The number of trucks used

5. Which analytics approach focuses on " what should we do?" by suggesting optimal decisions? (CO3, K1)

(a) Descriptive Analytics

(b) Diagnostic Analytics

(c) Predictive Analytics

(d) Prescriptive Analytics

6. When using Decision Trees for sourcing decisions, "High Uncertainty" Usually refers to unknown factors like (CO3, K2)

(a) The location of the warehouse

(b) The price of the product today

(c) Future demand or supplier reliability risks

(d) The standard shipping cost

7. In network design, Sensitivity Analysis is used to; (CO4, K1)

(a) Calculate the exact profit

(b) Test how changes in input parameters (e.g. fuel price) affect the optimal solution

(c) Measures the emotional impact on employees

(d) Aggregate customer data

8. When locating facilities using a Distance-Based Approach, the "Euclidean distance" represents: (CO4, K2)

(a) The driving distance via roads

(b) The straight-line distance("as the crow files")

(c) The time taken to travel

(d) The shipping cost per mile

9. Data Aggregation in supply chain network design involves; (CO5, K1)

(a) Grouping individuals customer orders or locations into zones/regions

(b) Collecting more data from competitors

(c) Deleting old data to save space.

(d) Splitting one order into multiple shipments

10. A "Baseline" model in network design is used to: (CO5, K2)

(a) Predict future sales

(b) Validate the model by replicating the current supply chain network's cost and flow

(c) Create a hypothetical ideal network immediately

(d) Calculate the Maximum possible capacity

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss the relationship between Supply Chain Metrics and Financial Metrics. How does improving "Perfect Order Fulfillment" impact a company's income Statement? (CO1, K2)

Or

(b) Explain the different Types of Supply chains (e.g. Efficient vs. Responsive). Under what market conditions is an "Efficient Supply Chain" preferred? (CO1, K4)

12. (a) Explain the Set Covering location model. How does it differ from the Maximal Covering model in terms of objectives? (CO2, K4)

Or

(b) Describe the Mini-Max method for single facility location. In what type of scenario (e.g. emergency services) is minimizing the maximum distance critical? (CO2, K2)

13. (a) Explain the role of Prescriptive Analytical in procurement. How can optimization models help in "Resource Allocation Decisions"? (CO3, K3)

Or

(b) Discuss the application of Decision Trees in making sourcing decisions under "High Uncertainty". Draw a simple decision tree structure for a "Make vs. Buy" decision. (CO3, K3)

14. (a) Analyze the Value of Supply Chain Network Modeling. Why cannot simple spreadsheets effectively solve complex location-allocation problems? (CO4, K4)

Or

(b) Explain the concept of Alternative Service levels in network design. How does increasing the service level (e.g., next-day delivery) typically impact the number of required facilities? (CO4, K4)

15. (a) Explain the importance of creating a Baseline model. What are the key steps to validate a baseline against actual historical costs? (CO5, K5)

Or

(b) Analyze the concept of Data Aggregation in network design. Why is it necessary to aggregate customer locations (e.g., by Zip Code or City) rather than modelling every single delivery address? (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Outline the requirements of Manufacturing and Purchasing in a modern supply chain. How can analytics bridge the gap between procurement costs and manufacturing efficiency? (CO1, K5)

Or

(b) Explain the role of E-commerce in reshaping supply chain metrics. How do "Last Mile Delivery" costs affect the traditional financial models of retail logistics?

(CO1, K4)

17. (a) Compare the Continuous Location Models (Gravity) with Discrete location Models (Fixed Charge). Which approach is better suited for selecting a distribution center from a list of pre-approved sites, and why? (CO2, K2)

Or

(b) Explain the use of Binary Variables in modeling "Capital Budgeting" and "Fixed Charge" problems. Write a conceptual formulation (Objective function + Constraints) for minimizing cost while deciding which warehouses to open. (CO2, K2)

18. (a) Apply the concept of Aggregate planning to a seasonal production problem. How can analytics determine the optimal mix of regular time, overtime and subcontracting to meet fluctuating demand? (CO3, K3)

Or

(b) Demonstrate how Evolutionary Solver engines (like Genetic Algorithms) are used in Warehouse Location problems. Why are standard linear solvers sometimes insufficient for non-linear or complex supply chain problems? (CO3, K3)

19. (a) Analyze the "Intuition Building" process using Center of Gravity models. Explain how shifting demand weights (volumes) pulls the optimal location towards high-volume customers. (CO4, K4)

Or

(b) Evaluate the impact of Adding Capacity constraints to a network model. How does limited capacity at a manufacturing plant force the model to source products from more distant, more expensive facilities? (CO4, K4)

20. (a) Analyze the process of " The Art of modeling" of industrial-strength results. Discuss the trade-off between model precision (detail) and model solvability (speed/complexity). When should a "Good" solution be accepted over an "Optimal" one? (CO5, K5)

Or

(b) Create a strategy for Adding Outbound Transportation to a network design model. How do you estimate transport costs (e.g., LTL vs. FTL rates) when the exact future shipment sizes are unknown. (CO5, K5)

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