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Subject Code:- BMBALS0413

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

MBA

SEM: IV - THEORY EXAMINATION (20.....- 20.....)

Subject: Analytics in Logistics and Supply Chain

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. A component not included in supply chain management (CO1,K1) 1
- (a) Marketing analytics
 - (b) Procurement
 - (c) Warehousing
 - (d) Distribution
- 1-b. The analytics tool used for visualizing daily inventory updates (CO1,K3) 1
- (a) Descriptive Analytics
 - (b) Predictive Analytics
 - (c) Prescriptive Analytics
 - (d) Diagnostic Analytics
- 1-c. Analyzing transportation data helps companies (CO2,K2) 1
- (a) Improve logistics efficiency
 - (b) Increase advertising budget
 - (c) Reduce labor turnover
 - (d) Merge product categories
- 1-d. Inventory turnover ratio is an example of..... (CO2,K1) 1
- (a) Dashboard metric
 - (b) Social media metric
 - (c) HR policy

- (d) Advertisement expense
- 1-e. The main use of residual plots in regression analysis.....(CO3,K2) 1
- (a) To calculate R-squared
- (b) To check model assumptions
- (c) To increase sample size
- (d) To select variables
- 1-f. The primary characteristic of homoscedasticity is _____ 1
.(CO3,K1)
- (a) Non-constant variance of residuals
- (b) Constant variance of residuals
- (c) High correlation among variables
- (d) Perfect prediction
- 1-g. Prescriptive analytics improves..... (CO4,K2) 1
- (a) Speed and accuracy of decision-making
- (b) Revenue recognition
- (c) Data storage capacity
- (d) Recruitment process
- 1-h. The scientific study of Operations Research involves (CO4,K1) 1
- (a) Mathematical modeling
- (b) Storyboarding
- (c) Customer profiling
- (d) Qualitative discussions
- 1-i. Incremental variable cost per unit changes with the _____ of the order. (CO5,K1) 1
- (a) timing
- (b) size
- (c) location
- (d) price
- 1-j. Cost-profit-volume analysis assumes fixed costs are _____ for a certain output range.(CO5,K2) 1
- (a) variable
- (b) constant
- (c) seasonal
- (d) unpredictable

2. Attempt all parts:-

- 2.a. Mention two benefits of using analytics in supply chain management.(CO1,K1) 2
- 2.b. Define 'On-Time Delivery' as a KPI.(CO2,K2) 2
- 2.c. Give one reason why differencing is applied in ARIMA models.(CO3,K2) 2
- 2.d. Provide examples of two data sources used in prescriptive analytics.(CO4,K2) 2

2.e. Identify two drawbacks of the level strategy in APP.(CO5,K1) 2

SECTION-B 30

3. Answer any five of the following:-

3-a. Describe how business intelligence tools aid decision-making in supply chain management.(CO1,K1) 6

3-b. Discuss how descriptive analytics supports continuous improvement in supply chains.(CO1,K2) 6

3-c. Differentiate between strategic, tactical, and operational decisions in supply chain.(CO2,K4) 6

3-d. Describe the relationship between supply chain analytics and customer satisfaction.(CO2,K2) 6

3.e. Evaluate the role of seasonality in demand forecasting for retail businesses.(CO3,K5) 6

3.f. Highlight the role played by prescriptive analytics in enhancing speed and accuracy of decisions.(CO4,K2) 6

3.g. Compare and contrast chase and level strategies in APP.(CO5,K4) 6

SECTION-C 50

4. Answer any one of the following:-

4-a. Provide a comprehensive analysis of internal vs. external data sources in supply chains with examples.(CO1,K4) 10

4-b. An FMCG company wants to improve demand forecasting using historical sales data. Describe the analytics techniques that can be applied and how they will help.(CO1,K4) 10

5. Answer any one of the following:-

5-a. Explain how key performance indicators are developed and used in SCM. Give examples.(CO2,K1) 10

5-b. A logistics company observed delays in last-mile delivery during festive seasons. How can historical data and dashboards help in planning for demand spikes?(CO2,K3) 10

6. Answer any one of the following:-

6-a. Critically evaluate the limitations of regression analysis and propose strategies to address them.(CO3,K5) 10

6-b. A marketing analyst develops a regression model to estimate the effect of price changes on product demand. After adding several new variables, the adjusted R-squared decreases. Interpret this result and discuss the analyst's next steps.(CO3,K4) 10

7. Answer any one of the following:-

7-a. Explain how decision analysis techniques support managers in dealing with uncertain outcomes.(CO4,K2) 10

7-b. A plant location decision needs to be made considering cost, labor, and 10

infrastructure. Frame a linear programming solution to guide management.(CO4,K3)

8. Answer any one of the following:-

- 8-a. A fashion brand experiences seasonal demand fluctuations. Discuss an appropriate APP strategy.(CO5,K5) 10
- 8-b. An e-commerce company must decide between fixed shipping prices and menu pricing based on delivery speed. Recommend a strategy and discuss its implications for customer satisfaction and supply chain costs.(CO5,K5) 10

REG:JAN_JUN-2025