Name: Enrolment No:	

UPES

End Semester Examination, May 2024

Course: Demand Planning and Forecasting **Semester: II**

Program: MBA – L&SCM **Time: 03 hrs.**

Course Code: LSCM7009P **Max. Marks: 100**

Instructions: Scientific Calculators are not allowed

SECTION A

10Qx2M=20Marks

S. No.	**All questions are compulsory**	**Marks**	**CO**
1.1	In Regression Analysis R squared value of 0.6 means what? a) A strong correlation between the two variables b) A not so strong correlation between the two variables c) A weak correlation between the two variables d)A negative correlation between the two variables	**2**	**CO1**
1.2	Which term refers to the fluctuation of consumer demand for goods or services over a specific period? a) Supply chain dynamics b) Demand patterns c) Inventory management d) Market segmentation	**2**	**CO1**
1.3	What is a common challenge faced in demand forecasting? a) Lack of historical data b) Over-reliance on intuition c) Limited market research d) Inaccurate technology	**2**	**CO1**
1.4	How does FedEx benefit from implementing Lean Six Sigma? a) By slowing down delivery times to ensure accuracy b) By reducing errors and improving operational efficiency c) By increasing the complexity of its supply chain d) By ignoring customer satisfaction metrics	**2**	**CO1**
1.5	What is the primary difference between time series forecasting and causal modeling in quantitative forecasting? a) Time series forecasting uses historical data, while causal modeling uses algorithms. b) Time series forecasting focuses on external factors, while causal modeling focuses on internal factors. c) Time series forecasting relies solely on patterns found in past data, while causal modeling attempts to explain why these patterns occur by identifying relationships between variables. d) There is no significant difference; both methods are interchangeable.	**2**	**CO1**

<table>
<tr><td>1.6</td><td>A company observes the following sales figures over a 5-day period: 120, 130, 125, 140, and 135 units. Calculate the 3-day Simple Moving Average (SMA) for the fourth day.
a) 130 units
b) 132 units
c) 131.67 units
d) 135 units</td><td>2</td><td>CO1</td></tr>
<tr><td>1.7</td><td>The cyclical component of a time series can be easily distinguished from the seasonal component due to its fixed and predictable pattern. (True /False)</td><td>2</td><td>CO1</td></tr>
<tr><td>1.8</td><td>What do you understand by Tech-driven Demand Forecasting? Explain with an example. (True /False)</td><td>2</td><td>CO1</td></tr>
<tr><td>1.9</td><td>A naive forecast model is often outperformed by more complex models, except when dealing with highly volatile time series data. (True /False)</td><td>2</td><td>CO1</td></tr>
<tr><td>1.10</td><td>The Simple Moving Average model can be modified to a Weighted Moving Average by assigning weights based on the age of the data, giving more significance to newer data points. (True /False)</td><td>2</td><td>CO1</td></tr>
<tr><td colspan="4">SECTION B
4Qx5M= 20 Marks</td></tr>
<tr><td>Q 2</td><td>Attempt all questions</td><td></td><td></td></tr>
<tr><td>2.1</td><td>Illustrate the concept of CPFR and its significance in demand planning, particularly through the lens of Coca-Cola's strategy?</td><td>5</td><td>CO2</td></tr>
<tr><td>2.2</td><td>List the elements of a Good Forecast.</td><td>5</td><td>CO2</td></tr>
<tr><td>2.3</td><td>Briefly describe the steps that are used to develop a forecasting system.</td><td>5</td><td>CO2</td></tr>
<tr><td>2.4</td><td>Give examples of industries that are affected by seasonality. Why would these businesses want to filter out seasonality?</td><td>5</td><td>CO2</td></tr>
<tr><td colspan="4">SECTION-C
3Qx10M=30 Marks</td></tr>
<tr><td>Q</td><td>Attempt all questions</td><td></td><td></td></tr>
<tr><td>3.1</td><td>Select a one specific industry (e.g., electronics, fashion, food) and explain which demand forecasting methods are most suitable for that industry. Justify your choice.</td><td>10</td><td>CO3</td></tr>
<tr><td>3.2</td><td>Daily demand for marigold flowers at a large garden store is shown below. Compute:
<table><tr><td>Period</td><td>Demand</td></tr><tr><td>1</td><td>85</td></tr><tr><td>2</td><td>92</td></tr><tr><td>3</td><td>71</td></tr><tr><td>4</td><td>97</td></tr><tr><td>5</td><td>93</td></tr><tr><td>6</td><td>82</td></tr><tr><td>7</td><td>89</td></tr></table></td><td>10</td><td>CO3</td></tr>
</table>

<table>
<tr><td></td><td>a. A three-period moving average for each period.
b. A five-period moving average for each period.</td><td></td><td></td></tr>
<tr><td>3.3</td><td>Only a portion of the following table for exponential smoothing has been completed. Complete the missing entries using α = .1.
<table>
<tr><th>Period</th><th>D_t</th><th>F_t</th><th>e_t</th><th>MAD_t</th><th>Tracking Signal</th></tr>
<tr><td>0</td><td>-</td><td>-</td><td>-</td><td>20</td><td></td></tr>
<tr><td>1</td><td>300</td><td>290</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td>280</td><td></td><td></td><td></td><td></td></tr>
<tr><td>3</td><td>309</td><td></td><td></td><td></td><td></td></tr>
</table></td><td>10</td><td>CO3</td></tr>
<tr><td colspan="4">SECTION-D
2Qx15M= 30 Marks</td></tr>
<tr><td>4</td><td>Long answer type questions</td><td></td><td></td></tr>
<tr><td>4.1</td><td>Imagine you are a demand planning manager for a retail company selling electronic gadgets (E.g., AC, Refrigerator, etc.). The company is planning to launch a new product in the market. Develop a detailed demand planning strategy for the new product, considering factors such as seasonality, market trends, and potential external influences. Outline the key steps you would take to forecast demand, allocate resources, and manage inventory. Discuss how you would leverage technology and data analytics in your demand planning process. Additionally, provide insights into how you would adjust the demand plan in the face of unforeseen events, such as supply chain disruptions or changes in consumer behavior.</td><td>15</td><td>CO4</td></tr>
<tr><td>4.2</td><td>Anshul runs a canoe manufacturing business and has tracked the seasonal demand for his products over four years, from 2015 to 2018. He predicts the total demand for canoes in 2019 will be 5,600. Using a multiplicative seasonal model, estimate the demand for Anshul's canoes in the spring of 2019.
<table>
<tr><td></td><td colspan="4">YEAR</td></tr>
<tr><td>Season</td><td>2015</td><td>2016</td><td>2017</td><td>2018</td></tr>
<tr><td>Winter</td><td>1400</td><td>1200</td><td>1000</td><td>900</td></tr>
<tr><td>Spring</td><td>1500</td><td>1400</td><td>1600</td><td>1500</td></tr>
<tr><td>Summer</td><td>1000</td><td>2100</td><td>2000</td><td>1900</td></tr>
<tr><td>Fall</td><td>600</td><td>750</td><td>650</td><td>500</td></tr>
</table>
Based on the given annual forecast for 2019 and the historical data, determine the expected spring demand for Anshul's canoes in 2019.</td><td>15</td><td>CO4</td></tr>
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