**"Understanding Data with Time Series Analysis"**

1. What is Time-Series Analysis primarily used for?

A) Predicting future values based on past trends.

B) Summarizing data into a single value.

C) Categorizing different types of data.

Answer: A) Predicting future values based on past trends.

Explanation: Time-Series Analysis is used to analyse data points collected or

sequenced over time to forecast or predict future trends based on historical patterns.

1. What is the key assumption in Time Series Analysis (TSA)?

A) Multiplicity

B) Stationarity

C) Variability

Answer: B) Stationarity

Explanation: Stationarity is a crucial assumption in TSA, meaning that the statistical properties (mean, variance) of the series do not change over time.

1. Which of these is NOT a component of Time-Series Analysis?

A) Trend

B) Seasonality

C) Modality

Answer: C) Modality  
Explanation: Modality is not a recognized component of time series analysis. The key components are Trend, Seasonality, and Cyclical patterns.

1. What does a 'Trend' in Time Series data indicate?

A) The overall direction of data over time.

B) Repeating patterns over a fixed period.

C) Random fluctuations in data.

Answer: A) The overall direction of data over time.  
Explanation: A trend represents a long-term movement in data values during the period under study, showing an upward, downward, or stable trend in time series data.

1. What is Seasonality in Time Series Analysis?

A) Long-term cycle of growth and decline.

B) Repeating patterns of data over a set period.

C) Unpredictable changes in the dataset.

Answer: B) Repeating patterns of data over a set period.  
Explanation: Seasonality refers to regular and predictable changes that recur over a calendar year, reflecting seasonal influences on the time series.

1. Which test is used to check if a dataset is stationary?

A) T-test

B) Augmented Dickey-Fuller Test

C) Pearson's Test

Answer: B) Augmented Dickey-Fuller Test

Explanation: The Augmented Dickey-Fuller Test is a common statistical test used to determine the presence of unit root in the series and hence, whether the series is stationary.

1. What does LSTM stand for in the context of time series analysis?

A) Long-Short Term Memory

B) Linear System Transfer Model

C) Least Squares Trend Method

Answer: A) Long-Short Term Memory

Explanation: LSTM stands for Long-Short Term Memory. It is a type of recurrent neural network architecture that is well-suited for learning from sequences of data, such as time series.

1. Why are missing values a limitation in Time-series Analysis?

A) They lead to larger datasets.

B) They can distort the time series forecasting.

C) They simplify the analysis process.

Answer: B) They can distort the time series forecasting.

Explanation: Missing values in a dataset can lead to inaccuracies in forecasting. They can distort the analysis as time-series methods rely on sequential data points.

1. What type of data transformation is typically necessary for Time Series Analysis?

A) Logarithmic transformation

B) Random transformation

C) No transformation is needed

Answer: A) Logarithmic transformation

Explanation: Logarithmic transformation is often used in time series analysis to stabilize the variance of a series, making it more suitable for analysis and forecasting.

1. What is the primary purpose of using LSTM in time series analysis?

A) To handle sequences of data effectively over long periods.

B) To reduce the size of the dataset.

C) To categorize different data points.

Answer: A) To handle sequences of data effectively over long periods.

Explanation: LSTM is designed to remember long-term dependencies in time series data, making it effective for predictions in cases where the sequence and duration of events are important.