



# DELHI SCHOOL OF BUSINESS

By Vivekananda Institute of Professional Studies - TC

~~PGDM~~ / PGDM FINTECH Program

## THIRD TRIMESTER (Batch: 2024-26) END-TERM EXAMINATION, APRIL 2025

Course Name	Python for Managers	Course Code	
Duration	Three Hours	Max. Marks	60

### Instructions:

Answer all questions. Each question carries 12 marks. Ensure your code is well-commented to explain your logic and steps. The use of Python libraries like pandas, matplotlib, etc is encouraged. Laptops need to be allowed for attempting the exam. Result to be digitally submitted in ipynb format.

### Question 1

Describe the process of downloading stock price data for Apple and Google over the last three years., ticker symbol AAPL and META. Mention the Python libraries you would use for downloading this data and explain how you would use them to extract the "Close" column for both stocks. Include code snippets to illustrate your answer. (12 marks) (CO:01)

### Question 2

After obtaining the "Close" prices for AAPL and META, data cleaning becomes crucial before any analysis. Explain the steps you would take to check for and handle missing values in your dataset. If there are any rows with null values, how would you deal with them? Provide Python code that demonstrates how to perform these data cleaning steps. (12 marks) (CO:02)

### Question 3

Visualization is a powerful tool for analyzing stock price movements. Using Python, how would you create a line chart to analyze the stock prices of AAPL and META? Your chart should include all possible customizations (like title, labels, legend, and colors) to make the chart informative and visually appealing. Provide a detailed code example to create such a line chart. (12 marks) (CO:03)

### Question 4



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Imagine you are a data analyst tasked with forecasting future values of a time series dataset. To achieve this, you need to explore the concept of ARIMA (AutoRegressive Integrated Moving Average) modelling. (12 marks) (CO:02)

1. **Understanding the Components:** Begin by breaking down the ARIMA model into its three main components: AutoRegressive (AR), Integrated (I), and Moving Average (MA). What does each component represent, and how do they contribute to the overall model?
2. **Identifying the Best Model:** Consider the steps involved in identifying the best ARIMA model for a given dataset. What criteria would you use to evaluate different models? Think about aspects such as stationarity, parameter selection, and model diagnostics.

### Question 5

As you delve into the world of time series analysis, understanding the concept of stationarity is crucial. Consider the following points to guide your exploration: (12 marks) (CO:03)

1. **Defining Stationarity:** Begin by reasoning through what stationarity means in the context of time series data. What are the key characteristics that define a stationary time series? How does it differ from a non-stationary time series?
2. **Implications for Analysis:** Discuss why stationarity is important in time series analysis. How does the presence or absence of stationarity affect the choice of models for forecasting? What methods can be used to test for stationarity (e.g., Augmented Dickey-Fuller test)?
3. Summarize your findings. Why is it essential for analysts to understand and identify stationarity in their data? What steps can be taken to transform a non-stationary series into a stationary one?