PGDM / PGDM FINTECH Program
THIRD TRIMESTER (Batch: 2024-26)
END-TERM EXAMINATION, APRIL 2025

Course Name	R 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. Laptops need to be allowed for attempting the exam. Result to be digitally submitted in rscript format.

Question 1

Forecasting is a critical skill in financial management. Using the ARIMA model, forecast the next 60 days' stock prices for Nvidia and Meta. Explain the steps for choosing an appropriate ARIMA model, fitting the model to your time series data, and validating the model with residual plots. Provide detailed R code for each step of your analysis and discuss how you would interpret the results. (12 marks) (CO:01)

Question 2

Explain the process of downloading stock price data for Nvidia (NVDA) and Meta (META) using their ticker symbols over the last three years. Discuss the R packages that are essential for fetching this data and how you can extract the "Adjusted Close" prices to create a dataframe. Provide R code snippets to demonstrate this process. (12 marks) (CO:01)

Question 3

Visualization is a powerful tool for analyzing stock price movements. Explain different ways in which GGPLOT can help you in creating different types of plots. Explain the relevant importance of each plot. (12 marks) (CO:03)

Question 4

As you embark on your journey to learn R programming, it's essential to grasp the foundational concepts of data structures and data types. Consider the following points to guide your exploration: 12 marks) (CO:04)

1. **Defining Data Structures**: Start by reasoning through what data structures are in the context of R. Why are they important for organizing and managing data? What role do they play in data analysis?

2. **Exploring Basic Data Types**: Reflect on the fundamental data types in R. What are the primary data types (e.g., numeric, character, logical, factor) that R supports? For each type, consider the following:

   - What is its purpose?

   - How is it represented in R?

   - Can you provide a simple example of each data type in R code?

3. Consider how these data structures and types can be applied in real-world scenarios. How would you choose the appropriate data structure for a specific dataset? What factors influence your decision?

Question 5

As you explore time series data analysis, it's crucial to address the challenges posed by missing values and to understand the significance of rolling statistics. Consider the following points to guide your exploration: (12 marks) (CO:02)

1. **Understanding Missing Values**: Begin by reasoning through the impact of missing values in time series data. Why is it important to address these gaps? What potential issues can arise if missing values are left unhandled?

2. **Methods for Filling Missing Values**: Explore different methods for filling missing values in time series data.

3. Discuss how rolling mean and standard deviation can inform investment decisions. Consider the following:

   How can a rolling mean help investors identify trends in asset prices?

   In what ways does rolling standard deviation provide insights into market volatility?

   How can these statistics be used to develop strategies for risk management and portfolio optimization?