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| **C:\Users\ADMIN\Desktop\j.png** | **JAIPURIA INSTITUE OF MANAGEMENT, INDORE**  Post Graduate Diploma in Management |
| **Course Title: Financial Time Series Analysis (Course Code: 40228)**  **End-Term Examination, Term - V (January, 2024)** | |
| **Time Duration : 2 Hours Total Marks: 40** | |

***General Instructions*:**

1. *Answer the questions as directed. The break-up of the marks is given wherever necessary.*
2. *Marks against each question is indicated to its right.*
3. *Do not write on the question paper except your roll number.*
4. *This exam is completely an R studio based exam. No answer sheet will be given.*
5. *Students need to submit one MsWord document as an answer script. The document should contain the commands typed for each question.*
6. *Question numbers should be given against the commands.*
7. *No Internet access will be given.*
8. *No formula, interest factors tables will be provided.*
9. *Students should continually keep saving their work.*
10. *Students should save the final word answer file with their name and roll no.*

Q1. From the dataset given, examine the variables Ri, Rm and Rt through the mean, median, skewness and kurtosis of these variables.

**(5 Marks)**

Q2. With the help of t-test, compare the mean of variables Ri, Rm and Rt with the value 20.

**(5 Marks)**

Q3. Differentiate between qqnorm and qqplot commands. Relate these commands to detecting normality in data.

**(5 Marks)**

Q4. Evaluate the normality of variables Ri and Rt using the graphical methods and test statistic method. Use at least three test statistics. Discuss the null hypothesis and alternate hypothesis of each test statistic method.

**(5 Marks)**

Q5. Explain stationarity of data. Differentiate between weak and strong form of stationarity. Check if the variables CloseInfy and CloseTCS are stationary. If they are not stationary, convert them to stationary data.

**(6 Marks)**

Q6. Identify the optimal lag of CloseInfy variable for AR modeling. Develop AR model for CloseInfy and forecast CloseInfy for 10 days.

**(7 Marks)**

Q7. Design a GARCH model using ARMA(2,1) as the mean model for CloseInfy. Forecast CloseInfy for next 10 days using this model.

**(7 Marks)**