(2½ Hours) **[Total Marks: 75]**

N. B.: (1) **All** questions are **compulsory**.
(2) Answers to the **same question** must be **written together**.
(3) Numbers to the **right** indicate **marks**.
(4) Draw **neat labeled diagrams** wherever **necessary**.
(5) Use of **Non-programmable** calculators is **allowed**.

1. Attempt *any three* of the following: **15**

a. Define data. With the help of examples explain the importance of data.
b. Compare cross-sectional, time series and panel data.
c. Citing examples, explain the different types of data based on structural form.
d. State the differences between parameter and statistic. Justify with examples.
e. Elaborate whether descriptive statistics is enough to draw conclusions about data. Specify how to overcome limitations of descriptive statistics?
f. List the limitations of using statistics for business.

2. Attempt *any three* of the following: **15**

a. Explain what is meant by Exploratory Data Analysis.
b. Differentiate between Bayesian and exploratory data analysis.
c. Discuss the underlying assumptions in Exploratory Data Analysis.
d. Highlight the significance of EDA.
e. Briefly explain the use of run sequence plot.
f. With the help of an example, show how graphics overcomes the limitations of quantative analysis.

3. Attempt *any three* of the following: **15**

a. State the importance of data preparation. Discuss in brief the process of data preparation.
b. Briefly explain the following challenges to data accessibility and suggest ways to overcome the challenge:
   i. Difficulty accessing data securely
   ii. Knowledge gaps
c. What is data consistency? Explain why we must ensure consistency of data.
d. Discuss the impact of data pollution.
e. What are exact and near duplicates? Suggest ways to detect, measure and handle such duplicates.
f. What are Outliers? How are they significant?

4. Attempt *any three* of the following: **15**

a. What is univariate data analysis? List and explain the objectives of univariate data analysis.
b. How does a frequency table help in analysis of univariate data?
c. What are quartiles? How do they help in plotting a box plot?
d. Discuss how standard deviation and variance help in univariate data analysis.
e. Highlight the role of kurtosis in univariate data analysis.
f. With the help of an example, explain Lorenz curve.

5. Attempt *any three* of the following: **15**

a. What is bivariate analysis? Briefly explain its types.
b. Explain contingency tables with the help of an example.
c. Use examples to explain the Spearman Correlation coefficient.
d. How does a scatter plot help us check for association between two metric variables?
e. How can Kendall's Tau Coefficient be used to check for correlation? Give examples.
f. In what way can we measure the association between two variables with different scales?