**Question Bank**

***Unit - I* : Introduction to Data Analysis & Python**

**Short Answer Questions (4 marks):**

1. What is data analysis?
2. How is data analysis different from analytics?
3. What is a Python library?
4. What is Jupyter Notebook used for?

**Long Answer Questions (8 marks):**5. What is Python? Why is it used in data analysis?  
6. Name any three Python libraries used in data analysis and explain them.  
7. What are the main features of IPython and Jupyter Notebook?  
8. Explain Python variables and basic data types with simple examples.

### **UNIT II: Data Structures, NumPy & File Handling**

**Short Answer Questions (4 Marks):**9. What is a list in Python?  
10. What is NumPy used for?  
11. What is a NumPy array?  
12. What is a random number in NumPy?

**Long Answer Questions (8 Marks):**13. How do you create and use arrays in NumPy? Give examples.  
14. How can you read and write files using NumPy?  
15. What is vectorized computation? Why is it useful in Python?  
16. Explain basic linear algebra operations in NumPy.

### **UNIT III: Pandas & Data Input/Output**

**Short Answer Questions (4 Marks):**17. What is a DataFrame in Pandas?  
18. What is a Series in Pandas?  
19. How do you read a CSV file using Pandas?  
20. What is meant by summarizing data?

**Long Answer Questions (8 Marks):**21. Explain Pandas DataFrame and Series with examples.  
22. How do you load and save data using Pandas?  
23. How can Pandas be used to get simple statistics like mean or count?  
24. Explain how to connect Pandas with web or database data.

### **UNIT IV: Data Cleaning & Wrangling**

**Short Answer Questions (4 Marks):**25. What is missing data in a dataset?  
26. How can you remove missing values in Pandas?  
27. What is string manipulation in Pandas?  
28. What is merging data?

**Long Answer Questions (8 Marks):**29. How do you clean a dataset using Pandas? Give examples.  
30. What are common ways to change or transform data in Pandas?  
31. How do you combine two datasets using join or merge?  
32. Explain how to reshape data using pivot and melt in Pandas.

### **UNIT V: Modeling & Visualization**

**Short Answer Questions (4 Marks):**33. What is Patsy used for in Python?  
34. Name two Python libraries for making charts.  
35. What is Seaborn used for?  
36. What is the difference between Pandas and Matplotlib?

**Long Answer Questions (8 Marks):**37. How does Patsy help in creating model formulas in Python?  
38. What are statsmodels used for in data analysis?  
39. How can you make simple plots using Pandas or Matplotlib?  
40. Compare Matplotlib, Seaborn, and Pandas for making graphs.